

VMS Installation and Operations: VAXstation II, II/GPX and MicroVAX II

Order Number: AA-LB32B-TE

June 1989

This guide describes the startup, shutdown, and backup operations for the VAXstation II, II/GPX and MicroVAX II. It also explains what you need to know to install the VMS operating system.

Revision/Update Information: This guide supersedes *VMS Installation and Operations: VAXstation I, II, II/GPX and MicroVAX I, II*, Version 5.0.

Software Version: VMS Version 5.2

**digital equipment corporation
maynard, massachusetts**

June 1989

The information in this document is subject to change without notice and should not be construed as a commitment by Digital Equipment Corporation. Digital Equipment Corporation assumes no responsibility for any errors that may appear in this document.

The software described in this document is furnished under a license and may be used or copied only in accordance with the terms of such license.

No responsibility is assumed for the use or reliability of software on equipment that is not supplied by Digital Equipment Corporation or its affiliated companies.


© Digital Equipment Corporation 1989.

All Rights Reserved.

Printed in U.S.A.

The postpaid Reader's Comments forms at the end of this document request your critical evaluation to assist in preparing future documentation.

The following are trademarks of Digital Equipment Corporation:

CDA	MASSBUS	VAX RMS
DDIF	PrintServer 40	VAXstation
DEC	Q-bus	VMS
DECnet	ReGIS	VT
DECUS	ULTRIX	XUI
DECwindows	UNIBUS	
DIGITAL	VAX	
LN03	VAXcluster	

The following is a third-party trademark:

PostScript is a registered trademark of Adobe Systems, Inc.

ZK4451

Production Note

This book was produced with the VAX DOCUMENT electronic publishing system, a software tool developed and sold by Digital. In this system, writers use an ASCII text editor to create source files containing text and English-like code; this code labels the structural elements of the document, such as chapters, paragraphs, and tables. The VAX DOCUMENT software, which runs on the VMS operating system, interprets the code to format the text, generate a table of contents and index, and paginate the entire document. Writers can print the document on the terminal or line printer, or they can use Digital-supported devices, such as the LN03 laser printer and PostScript printers (PrintServer 40 or LN03R ScriptPrinter), to produce a typeset-quality copy containing integrated graphics.

Contents

PREFACE

xi

PART I

CHAPTER 1 THE INSTALLATION, UPGRADE, AND UPDATE PROCEDURES

1-1

1.1 WHAT HAPPENS DURING AN INSTALLATION

1-1

1.2 WHAT HAPPENS DURING AN UPGRADE

1-1

1.3 WHAT HAPPENS DURING AN UPDATE

1-2

CHAPTER 2 MICROVAX II HARDWARE

2-1

2.1 VAXSTATION II, II/GPX AND MICROVAX II COMMON FEATURES

2-1

2.2 VAXSTATION II, II/GPX AND MICROVAX II DIFFERENCES

2-2

2.3 MICROVAX MODELS

2-2

2.4 PROCESSOR CONTROL PANEL

2-5

2.5 CPU PANEL

2-9

2.5.1 Baud-Rate Control Knob

2-10

2.5.2 Halt Enable/Disable Switch

2-10

2.5.3 Power-Up Mode Switch

2-11

Contents

2.6	CONTROLS AND INDICATORS ON THE BA200 SERIES MODEL	2-12
2.7	THE CONSOLE TERMINAL	2-18
2.8	TURNING ON THE CONSOLE TERMINAL	2-19
2.8.1	Checking the Baud Rate on the Console Terminal	2-20
2.9	THE TAPE CARTRIDGE DRIVE	2-20
2.10	THE DISKETTE DRIVE	2-23
CHAPTER 3 USING TAPE CARTRIDGES AND FLOPPY DISKETTES		3-1
3.1	TAPE CARTRIDGES	3-1
3.1.1	Inserting a Tape Cartridge	3-3
3.1.2	Initializing a Tape Cartridge	3-4
3.1.3	Mounting a Tape Cartridge	3-5
3.1.4	Dismounting a Tape Cartridge	3-6
3.1.5	Removing a Tape Cartridge	3-6
3.2	FLOPPY DISKETTES	3-7
3.2.1	Inserting an RX33 Diskette	3-9
3.2.2	Initializing and Formatting an RX33 Diskette	3-10
3.2.3	Mounting an RX33 Diskette	3-12
3.2.4	Dismounting an RX33 Diskette	3-12
3.2.5	Removing an RX33 Diskette	3-13
CHAPTER 4 BEFORE INSTALLING VMS		4-1
4.1	THE DISTRIBUTION MEDIA AND THE SYSTEM DISK	4-1
4.2	DEVICE NAMES	4-1
4.3	MICROVAX DEVICES	4-2
4.3.1	MicroVAX II System Without RA-series Disks	4-2
4.3.2	MicroVAX II System with RA-series Disks	4-3
4.3.3	Console Subsystem with a KFQSA Controller	4-4

4.3.4	Additional Device Names	4-5
-------	-------------------------	-----

4.4	PREPARING THE SYSTEM DISK	4-6
-----	---------------------------	-----

4.5	INFORMATION ON VAXCLUSTER ENVIRONMENTS	4-7
-----	--	-----

CHAPTER 5	INSTALLING VMS	5-1
------------------	-----------------------	------------

5.1	TURNING ON THE SYSTEM	5-1
-----	-----------------------	-----

5.2	BOOTING STANDALONE BACKUP	5-3
-----	---------------------------	-----

5.2.1	Magnetic Tape or Tape Cartridge Kit	5-3
-------	-------------------------------------	-----

5.2.2	Floppy Diskette Kit	5-4
-------	---------------------	-----

5.2.3	Compact Disc Kit	5-6
-------	------------------	-----

5.3	BOOTING THE NEW SYSTEM DISK	5-6
-----	-----------------------------	-----

5.4	INFORMATION ON THE MANDATORY UPDATE	5-7
-----	-------------------------------------	-----

PART II

CHAPTER 6	STARTUP AND SHUTDOWN PROCEDURES	6-1
------------------	--	------------

6.1	OVERVIEW OF BOOTING	6-1
-----	---------------------	-----

6.2	SNIFFER BOOT	6-2
-----	--------------	-----

6.3	AUTOMATIC BOOT	6-2
-----	----------------	-----

6.4	MANUAL BOOT	6-3
-----	-------------	-----

Contents

6.5	CONVERSATIONAL BOOT	6-4
6.6	BOOTING WITH XDELTA	6-6
6.7	BOOTING FROM [SYSF] DURING AN UPGRADE	6-6
6.8	BOOTING FROM A DIFFERENT DIRECTORY ON THE SYSTEM DISK	6-6
6.9	IF THE SYSTEM DOES NOT BOOT	6-7
6.10	SHUTTING DOWN THE SYSTEM	6-7
6.10.1	Types of Shutdowns	6-7
6.10.2	Emergency Shutdown with CRASH Commands	6-8
6.11	IF THE SYSTEM FAILS	6-9
CHAPTER 7 BACKUP PROCEDURES		7-1
7.1	OVERVIEW OF STANDALONE BACKUP	7-1
7.1.1	Installing Standalone BACKUP on the System Disk	7-1
7.1.2	Bootting Standalone BACKUP from the System Disk	7-2
7.1.3	Installing Standalone BACKUP on Diskettes	7-3
7.1.4	Bootting Standalone BACKUP from Diskettes	7-5
7.1.5	Installing Standalone BACKUP on a Tape Cartridge	7-7
7.1.6	Bootting Standalone BACKUP from a Tape Cartridge	7-8
7.2	BACKING UP THE SYSTEM DISK	7-9
7.2.1	Backing Up the System Disk to Diskettes	7-10
7.2.2	Restoring the System Disk from Diskettes	7-12
7.2.3	Backing Up the System Disk to a Tape Cartridge	7-13
7.2.4	Restoring the System Disk from a Tape Cartridge	7-15

GLOSSARYGlossary-1

INDEX

FIGURES

2-1	The MicroVAX II 630QY and 630QZ Models	2-2
2-2	The MicroVAX II 630QB Model	2-3
2-3	The MicroVAX II 630QE Model	2-4
2-4	The MicroVAX II BA200 series Model	2-5
2-5	The MicroVAX II 630QY and 630QZ Models Processor Control Panels	2-6
2-6	The MicroVAX II 630QB Model Processor Control Panel	2-7
2-7	The MicroVAX II 630QE Model Processor Control Panel	2-8
2-8	The MicroVAX II CPU Panel	2-10
2-9	Front View of the BA200 series Chassis	2-12
2-10	Mass Storage Tray - BA200 series	2-15
2-11	CPU Cover Panel - BA200 series	2-16
2-12	Power Supply - BA200 series	2-17
2-13	A Vertical Tape Cartridge Drive	2-21
2-14	The RX33 Diskette Drive	2-24
3-1	Inserting a Label on a Tape Cartridge	3-2
3-2	Positioning the Write-Protect Switch	3-3
3-3	Inserting a Tape Cartridge	3-5
3-4	The RX33 Diskette	3-8
3-5	The Diskette Write-Protect Tab	3-9
3-6	Inserting an RX33 Diskette	3-11

TABLES

2-1	Controls and Indicator Lights on the Processor Control Panel	2-9
2-2	Settings on the Power-Up Mode Switch	2-11
2-3	Controls on the BA200 series Model	2-13
2-4	Indicator Lights on the BA200 series Model	2-14
2-5	Settings of the Power-Up Mode Switch on the BA200 series Model	2-17
2-6	Turning On the Console Terminal	2-19
2-7	TK50 Controls	2-22

Contents

2-8	TK50 Indicator Lights	2-22
3-1	Differences Between RX33 and RX50 Diskettes	3-7
6-1	SYSGEN Commands Used in SYSBOOT	6-5

Preface

This guide refers to the following products by their abbreviated names:

- The VAXstation II, VAXstation II/GPX, and MicroVAX II computers are referred to collectively as the VAXstation II, II/GPX and MicroVAX II.
- The VAXstation II computer is referred to as the VAXstation II.
- The VAXstation II/GPX computer is referred to as the VAXstation II/GPX.
- The MicroVAX II computer is referred to as the MicroVAX II.

VMS Installation and Operations: VAXstation II, II/GPX and MicroVAX II contains specific installation and operations information for the VAXstation II, II/GPX and the MicroVAX II. All references to the MicroVAX II apply to the VAXstation II except as noted. Use this guide in conjunction with the current version of *VMS Upgrade and Installation Procedures* when you want to install or upgrade the VMS operating system.

Store the hardcopy version of this guide in the binder that contains the current version of the *VMS Release Notes*. Place it in the section after the *VMS Release Notes*.

Intended Audience

This guide is intended for system managers, operators, and users of the VAXstation II, II/GPX and the MicroVAX II.

Document Structure

VMS Installation and Operations: VAXstation II, II/GPX and MicroVAX II is organized in two parts: Part I provides an overview of the system and covers what you need to know to install the VMS operating system on a MicroVAX II. Part II describes operations that you perform frequently on the system, such as system startup, shutdown, and backup.

Part I

- Chapter 1 describes the VMS installation, upgrade, and update procedures.
- Chapter 2 describes system hardware used during the installation.
- Chapter 3 contains instructions for using tape cartridges and diskettes.
- Chapter 4 summarizes the basic information you need to know before installing the VMS operating system.
- Chapter 5 describes some of the tasks you perform when you install the VMS operating system. These tasks are specific to the MicroVAX II.

Preface

Part II

- Chapter 6 contains instructions for starting up the system. It also describes procedures for shutting down the system.
- Chapter 7 describes backup procedures that you should perform on a regular basis.
- Glossary lists and defines terms.

Associated Documents

The following documents may be useful:

- *VMS Upgrade and Installation Procedures*—describes the installation and upgrade procedures for the current release of the VMS operating system. Use this guide in conjunction with *VMS Installation and Operations: VAXstation II, II/GPX and MicroVAX II* when you are doing either an installation or an upgrade. This guide also contains information on the User Environment Test Package (UETP).
- *VMS Release Notes*—provides notes on various aspects of the VMS operating system.
- The hardware manuals supplied with your VAX computer provide detailed information on system hardware.

Conventions

The following conventions are used in this manual:

Ctrl/x	A sequence such as Ctrl/x indicates that you must hold down the key labeled Ctrl while you press another key or a pointing device button.
.	A vertical ellipsis indicates the omission of items from a code example or command format; the items are omitted because they are not important to the topic being discussed.
red ink	Red ink indicates information that you must enter from the keyboard or a screen object that you must choose or click on. For online versions, user input is shown in bold .
boldface text	Boldface text represents the introduction of a new term or the name of an argument, an attribute, or a reason.
UPPERCASE TEXT	Uppercase letters indicate that you must enter a command (for example, enter OPEN/READ).
numbers	Unless otherwise noted, all numbers in the text are assumed to be decimal. Nondecimal radices—binary, octal, or hexadecimal—are explicitly indicated.

Part I

Part I describes what you need to know to install the VMS operating system.

Part I

Copyright © 2000 by The McGraw-Hill Companies, Inc.

1

The Installation, Upgrade, and Update Procedures

This chapter describes what happens during the installation, upgrade, and update procedures. It also tells you when you should do an installation, an upgrade, or an update and refers you to the appropriate documentation.

Before you install, upgrade, or update the VMS operating system, read this chapter.

1.1

What Happens During an Installation

When you install the VMS operating system, the installation procedure does the following:

- Initializes the system disk, erasing its contents
- Creates a system directory structure
- Transfers the VMS files from the distribution media to the system disk

Use the installation procedure under the following conditions:

- If your VAX computer is new (it has never had any version of the VMS operating system running on it).
- If your VAX computer is running a version of the VMS operating system and you want to destroy the contents of the system disk (both VMS and user files).
- If you are running the VMS operating system, but are not able to perform an upgrade. For example, if you do not have a standard version of the VMS operating system on your system disk, the upgrade procedure will not work correctly.

If you are going to install the VMS operating system, read Chapter 1, Chapter 2, Chapter 3, Chapter 4, and Chapter 5 of this guide and follow the installation procedure in the current version of the *VMS Upgrade and Installation Procedures*.

CAUTION: The installation procedure initializes the system disk, erasing its contents. For this reason, use the installation procedure only on new VAX computers or if you want to destroy the contents of the system disk.

1.2

What Happens During an Upgrade

When you upgrade the VMS operating system, the upgrade procedure does the following:

- Makes room for the upgrade by purging and deleting some VMS files, but leaves some of the VMS files and all the user files intact
- Transfers the VMS files from the distribution media to the system disk

The Installation, Upgrade, and Update Procedures

1.2 What Happens During an Upgrade

- Merges the old VMS files and the new VMS files
- Cleans up files and structures used only during the upgrade

In most cases, if you are already running a standard version of the VMS operating system, you can use the upgrade procedure to obtain a higher version. The upgrade procedure does not initialize the system disk.

CAUTION: The upgrade procedure will not work correctly if you have changed the names of system directories on your system disk. Restore your VMS system disk to a standard system before attempting an upgrade.

To perform an upgrade, see the current version of the *VMS Upgrade and Installation Procedures* for a step-by-step description of the upgrade procedure.

1.3 What Happens During an Update

You use the update procedure to make minor fixes to the operating system. When you update the VMS operating system, the update procedure does the following:

- Applies patches to some VMS files
- Replaces some VMS files

After performing an installation or an upgrade, you perform an update. This update is referred to as the *mandatory update*. The directions for an installation or an upgrade indicate when to perform the mandatory update.

Some maintenance releases of the VMS operating system are also applied with the update procedure.

CAUTION: The update procedure will not work correctly if you have changed the names of system directories on your system disk. Restore your VMS system disk to a standard system before attempting an update.

2 MicroVAX II Hardware

Before you install the VMS operating system, you must be familiar with your system's hardware. This chapter describes hardware similarities and differences and includes illustrations of the four MicroVAX models. It also describes the following MicroVAX II hardware components:

- Processor control panel (all models except the BA200 series)
- CPU panel (all models except the BA200 series)
- Controls and indicators on the BA200 series model
- Console terminal
- Tape cartridge drive and tape cartridges
- Diskette drive and diskettes

Your system's hardware differs depending on whether it is a 630QY, 630QZ, 630QB, 630QE, or a BA200 series model.

This chapter does not include a detailed description of MicroVAX hardware; this chapter only describes the hardware you need to be familiar with to perform system management operations. For a more detailed description of MicroVAX hardware, see the hardware manuals supplied with your computer.

2.1 VAXstation II, II/GPX and MicroVAX II Common Features

The MicroVAX II super-microsystem is a member of the 32-bit VAX family of computers that is configured using the extended Q-bus. It is compatible with larger VAX computers.

The MicroVAX II performs a wide range of applications, including real-time applications, office automation, and general-purpose programming.

The MicroVAX II can be integrated into a network by using a DECnet or an Ethernet local area network interface. With the MicroVAX II, these options can send, share, and store files from systems in your department or in your organization.

Additional features include the following:

- 1 Mb of on-board memory
- Memory management
- Time-of-year clock with battery backup

MicroVAX II Hardware

2.2 VAXstation II, II/GPX and MicroVAX II Differences

2.2 VAXstation II, II/GPX and MicroVAX II Differences

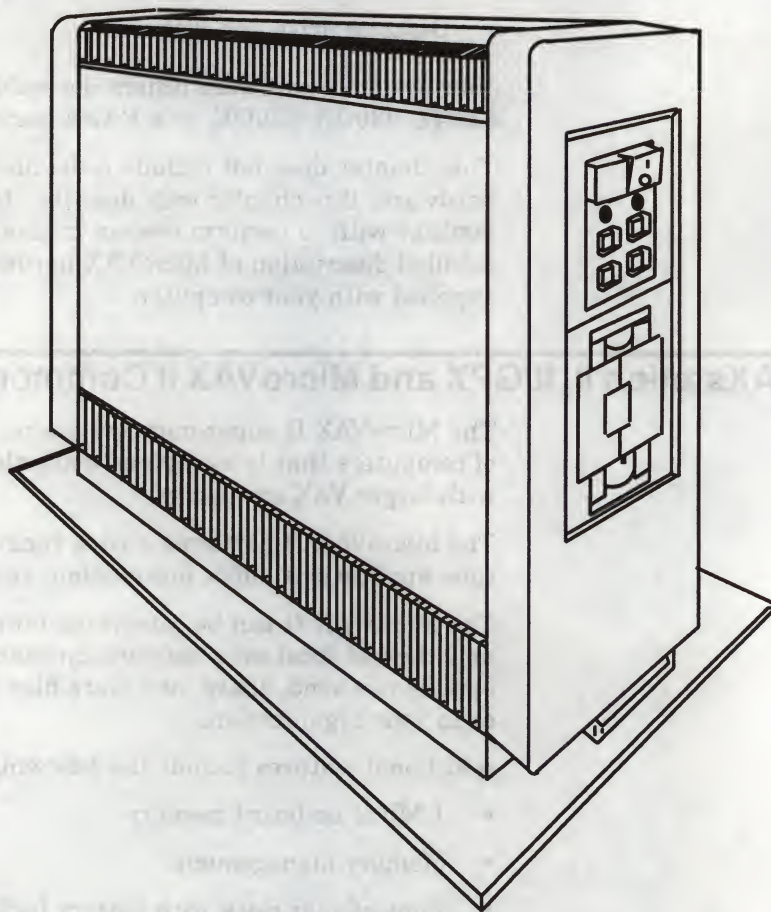
The VAXstation II, which is based on the MicroVAX II CPU, is a high-powered, single-user graphics workstation. It provides 2 Mb of memory and can be upgraded to 9 Mb. The VAXstation II is compatible with other VAX computers.

The VAXstation II/GPX color graphics workstation, which uses the MicroVAX II CPU with the GPX accelerator chipset, provides the same features as the VAXstation II. In addition, the VAXstation II/GPX offers increased speed and color graphics. Memory can be expanded to 9 Mb.

2.3 MicroVAX Models

This section contains illustrations of the four MicroVAX models.

Figure 2-1 The MicroVAX II 630QY and 630QZ Models

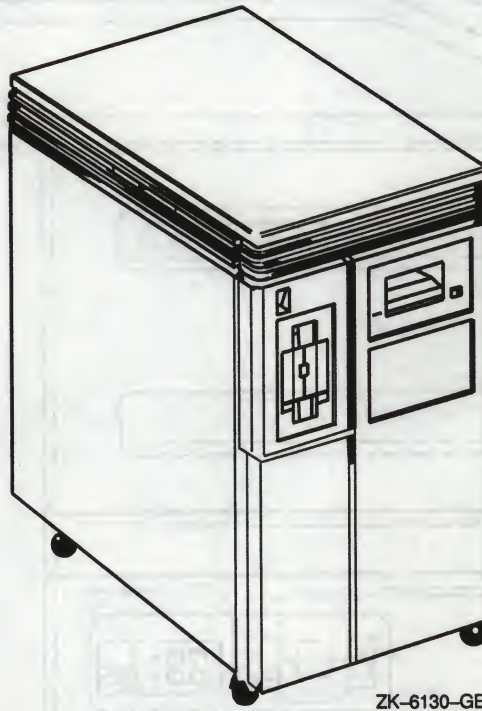


ZK-6129-GE

MicroVAX II Hardware

2.3 MicroVAX Models

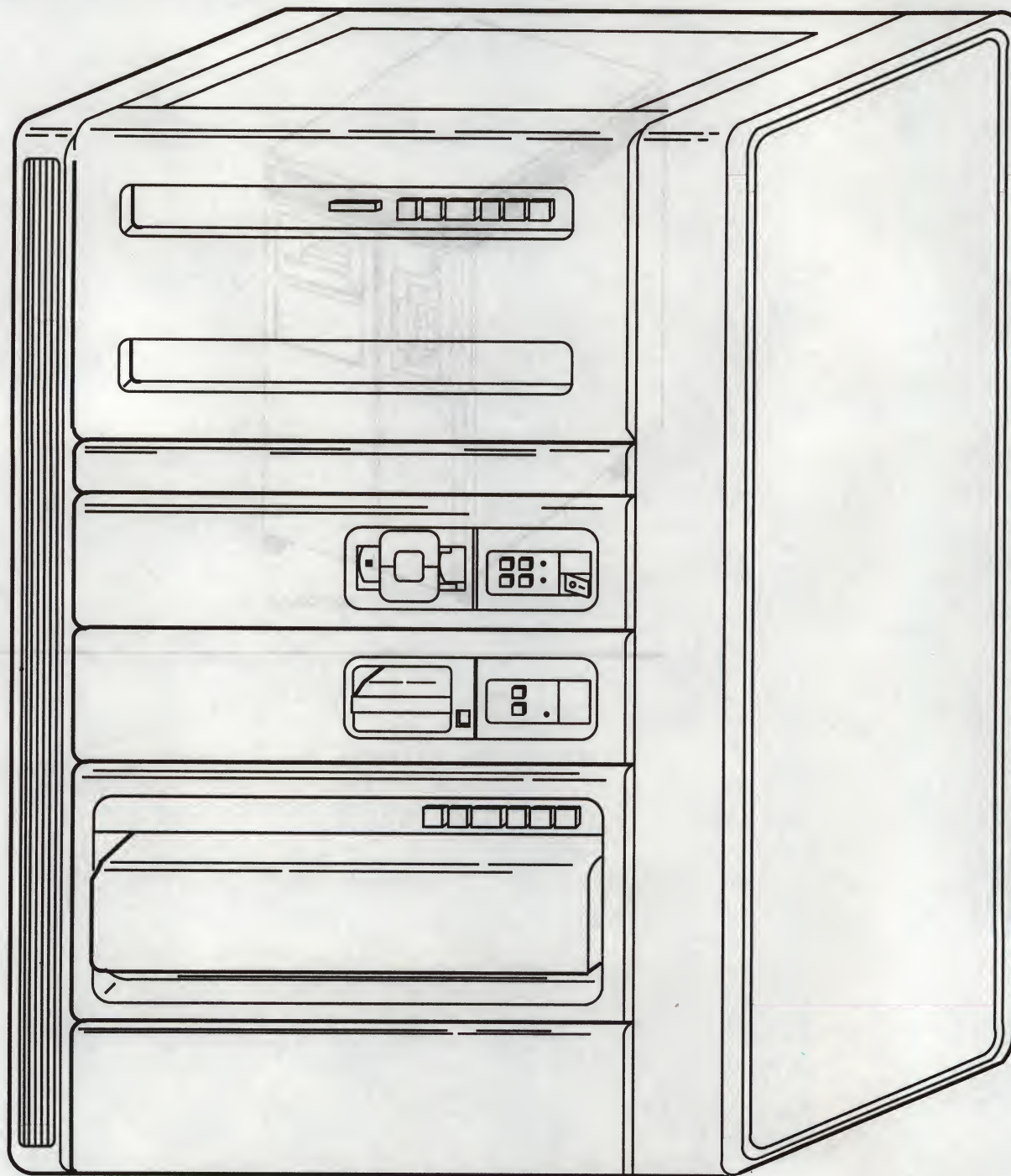
Figure 2-2 The MicroVAX II 630QB Model



MicroVAX II Hardware

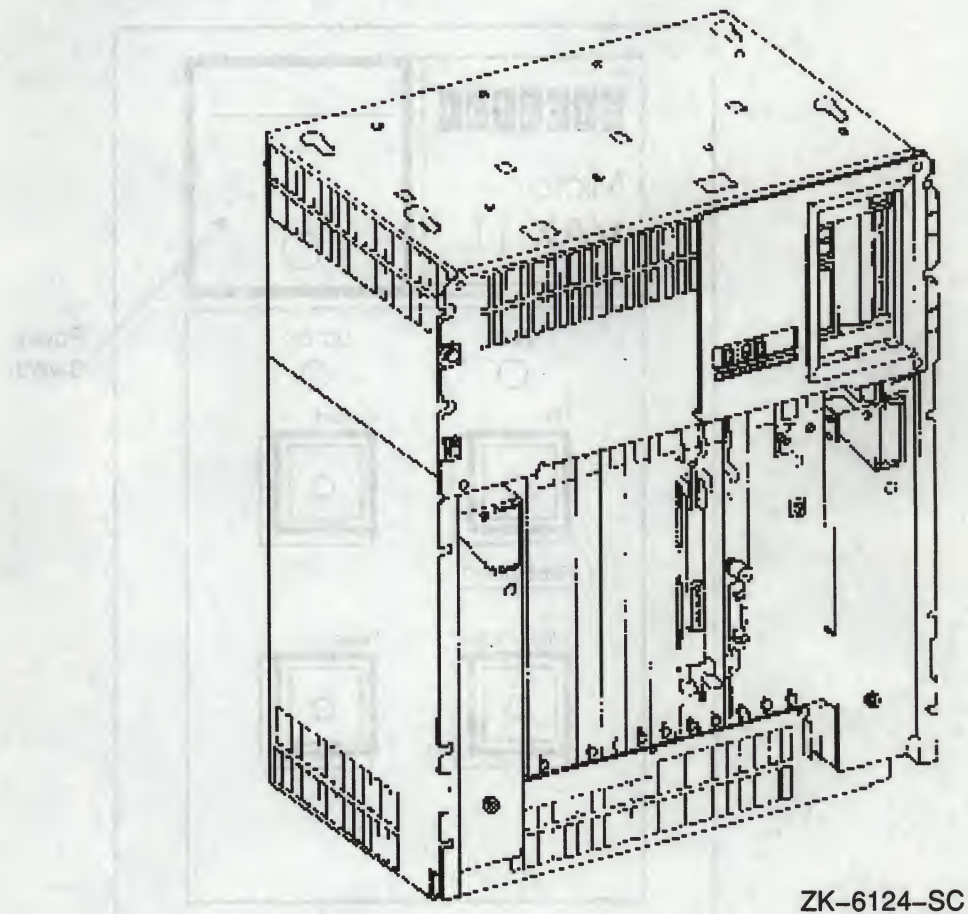
2.3 MicroVAX Models

Figure 2-3 The MicroVAX II 630QE Model



ZK-6121-GE

Figure 2-4 The MicroVAX II BA200 series Model



2.4 Processor Control Panel

The processor control panel is located on the front of all MicroVAX processors except the BA200 series model. It consists of controls and indicator lights. (Section 2.6 describes and illustrates the controls and indicator lights on the BA200 series model.)

Figure 2-5 is an illustration of the processor control panels on the MicroVAX II 630QY and 630QZ models.

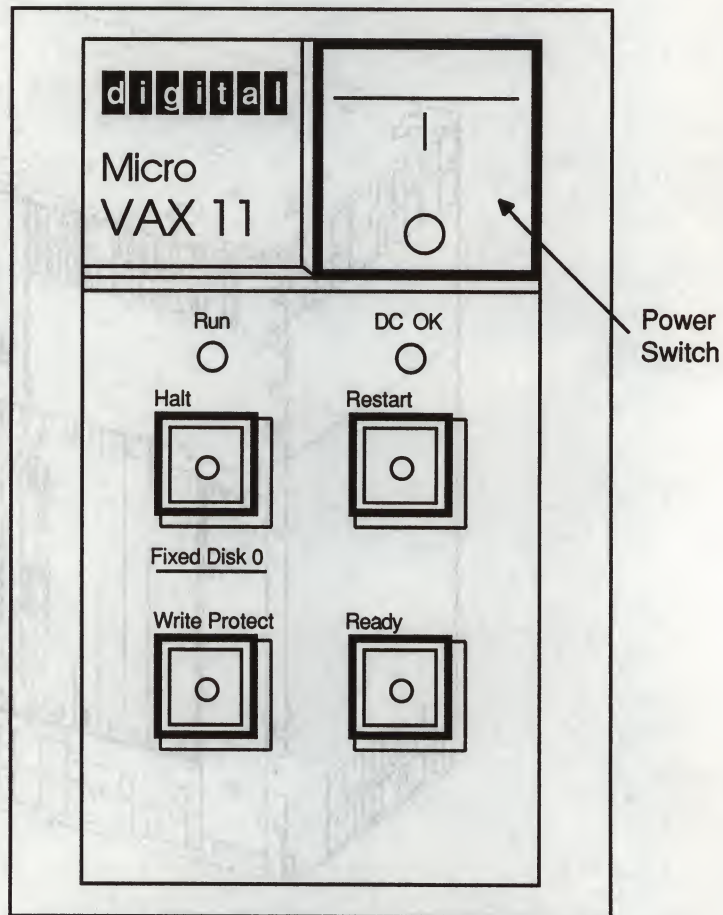
Figure 2-6 is an illustration of the processor control panel on the MicroVAX II 630QB model. Note that there may be additional write-protect and ready lights for additional fixed disks.

Figure 2-7 is an illustration of the processor control panel on the MicroVAX II 630QE model.

MicroVAX II Hardware

2.4 Processor Control Panel

Figure 2-5 The MicroVAX II 630QY and 630QZ Models Processor Control Panels

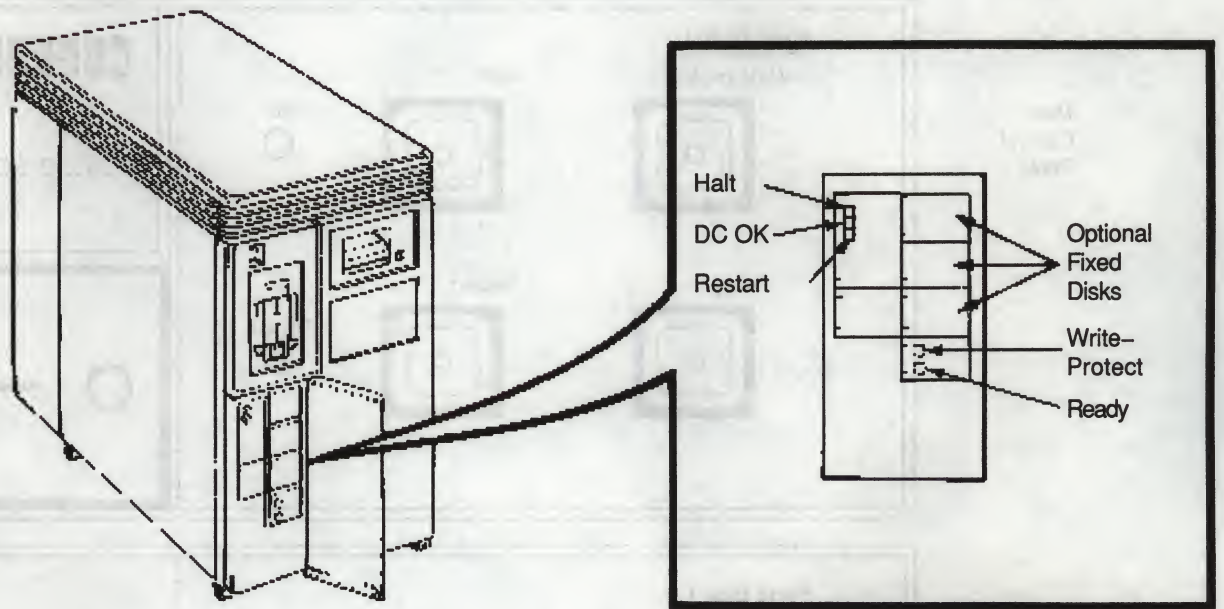


ZK-4147-GE

MicroVAX II Hardware

2.4 Processor Control Panel

Figure 2-6 The MicroVAX II 630QB Model Processor Control Panel

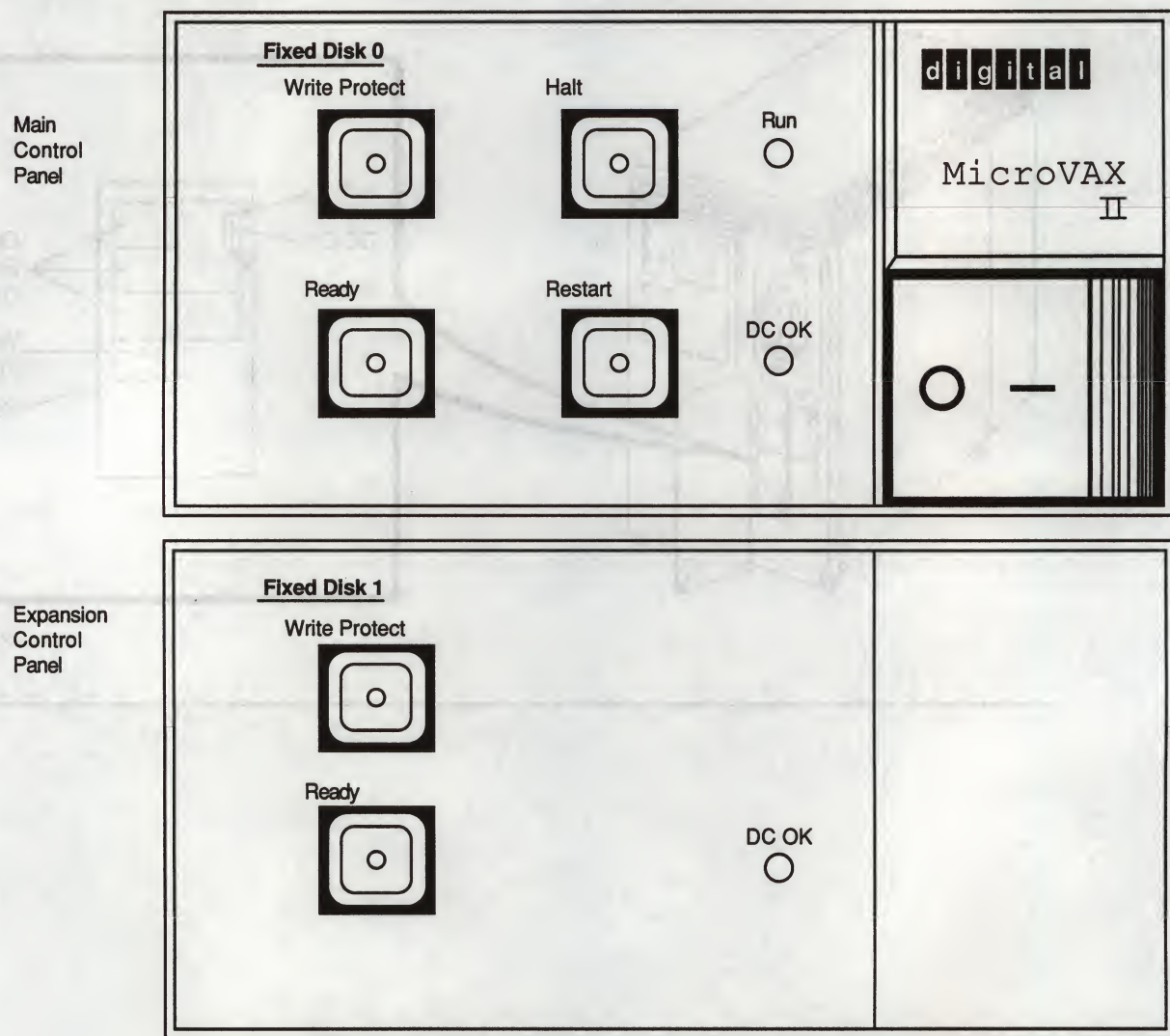


ZK-4206-SC

MicroVAX II Hardware

2.4 Processor Control Panel

Figure 2-7 The MicroVAX II 630QE Model Processor Control Panel



ZK-5002-GE

Table 2-1 describes the controls and indicator lights on the processor control panel.

MicroVAX II Hardware

2.4 Processor Control Panel

Table 2-1 Controls and Indicator Lights on the Processor Control Panel

Control/Indicator Light	Description
Power switch	Setting this switch to 1 turns on the power; setting it to 0 turns off the power. Most MicroVAX power switches contain an orange light that glows when power to the system is turned on.
Run light	This light glows green when the processor is running.
DC OK light	This light glows green if all DC voltages are present and within tolerance levels.
Halt button	This button stops the processor. It contains a red light. When you push the HALT button in, the light on the button glows red and the button stays pushed in. When you release the HALT button, by pressing it again, the system enters console mode. On MicroVAX II processors, the Halt Enable/Disable switch on the CPU panel must be set to the Enable position for the HALT button to stop the processor. If the Halt Enable/Disable switch is set to the Disable position, pressing the HALT button causes the light on the button to glow red, but does not stop the system. Note that the F5 (BREAK) key on the console terminal works the same way as the HALT button.
Restart button	This button causes a simulated power down/up sequence to restart CPU operation. Pressing this button has no effect if the system is stopped.
Write Protect button	This button prevents writing to a fixed disk. When this button is pushed in, the light on the button glows red on a MicroVAX II.
Ready button	This button prevents writing to or reading from a fixed disk. When this button is pushed in, the disk is protected from reading or writing. When the button is released, the light on the button glows green; the disk is available for reading and writing. The light on the ready button blinks when data is read from or written to the fixed disk.

2.5 CPU Panel

The CPU panel is located on the back of all MicroVAX processors except the BA200 series model. (See Section 2.6 for a description of the controls and indicators on the BA200 series model.)

On a MicroVAX II system, the CPU panel contains the following controls:

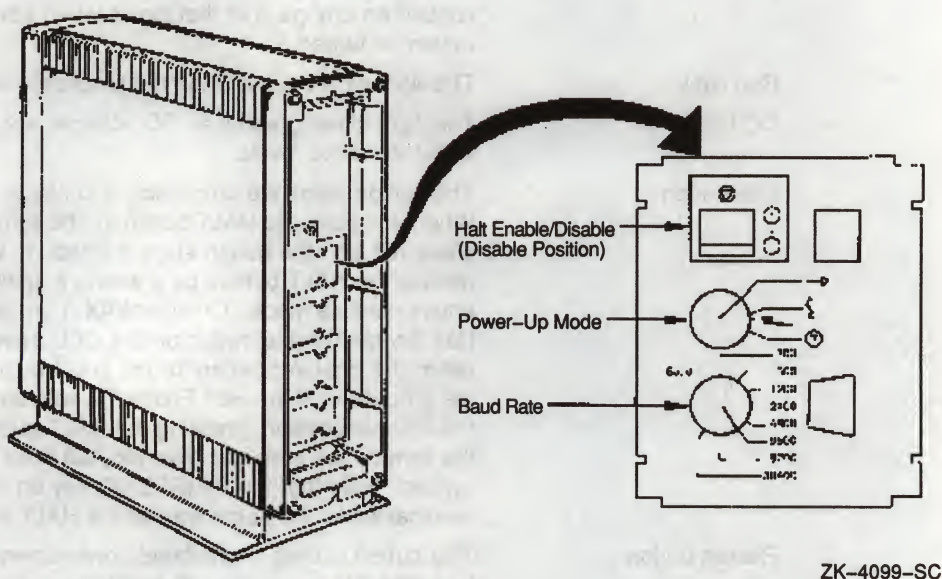
- Baud-rate control knob
- Halt Enable/Disable switch
- Power-up mode switch
- Port used for the console terminal

MicroVAX II Hardware

2.5 CPU Panel

Figure 2-8 shows the MicroVAX II CPU panel.

Figure 2-8 The MicroVAX II CPU Panel



2.5.1 Baud-Rate Control Knob

The baud-rate control knob determines the speed at which characters are received from and transmitted to the console terminal. The baud rates set on the terminal and on the computer must be identical for the console terminal to communicate with the system. Digital recommends that you set the baud rate for both the console terminal and the system to 9600 baud. Section 2.8 contains instructions for checking the baud rate of the console terminal.

On a MicroVAX II system, the baud-rate control knob is located at the bottom of the CPU panel (or on the left of a horizontal model). The different baud rate positions are displayed on the panel. Figure 2-8 shows the CPU panel on a MicroVAX II with the baud-rate control knob set to 9600 baud.

2.5.2 Halt Enable/Disable Switch

The Halt Enable/Disable switch is located at the top of the CPU panel (or on the right of a horizontal computer). It is labeled with an encircled triangle, the international symbol for halt. You enable or disable halts as follows:

- You *enable* halts when the switch is pushed toward the encircled triangle and aligned with the circle with the dot inside it.

- You *disable* halts when the switch is pushed away from the encircled triangle and aligned with the circle with the dot outside it.

The Halt Enable/Disable switch on a MicroVAX II system controls whether the system can be stopped. The Halt Enable/Disable switch must be set to the ENABLE position for the HALT button on the processor control panel or the F5 (BREAK) key to stop the system.

For normal system operations, set the Halt Enable/Disable switch to the DISABLE position. This prevents the system from being stopped if the HALT button on the system control panel is pressed accidentally. Also, if you disable halts, a system boots automatically when the system power is turned on. In addition, if you disable halts, the light on the HALT button glows if the HALT button is pressed.

Figure 2-8 illustrates the Halt Enable/Disable switch on the CPU panel.

2.5.3 Power-Up Mode Switch

The power-up mode switch is located in the middle of the CPU panel. This switch allows you to select one of three symbols that indicates a power-up mode. Table 2-2 describes the settings on the power-up mode switch.

Table 2-2 Settings on the Power-Up Mode Switch

Setting	Description
Arrow	This is the original factory setting and the setting for normal system operations. The system performs full diagnostics when it is turned on at this setting. After the diagnostics complete, if you enable halts, the console-mode prompt (>>>) appears on the console terminal screen. If you disable halts, your system boots automatically. If the system has been turned off for many days, however, you might be asked to choose the console-mode language you want to use. To select a language, turn the switch to the language-inquiry setting (face in profile). Digital recommends that this switch be set to the arrow during installation.
Face in profile	This is the language-inquiry setting. The system performs full diagnostics when it is turned on at this setting. After the diagnostics complete, if the console terminal supports the DEC Multinational Character Set, the console-mode language prompt is displayed. After you choose the language, you enable halts, and the console-mode prompt (>>>) appears on the console terminal screen. If you disable halts, your system boots automatically. First, select a console-mode language. Second, turn the power-up mode switch to the arrow.
Encircled T	This is the test setting. Do not use this setting. It is reserved for use by Digital Field Service.

MicroVAX II Hardware

2.5 CPU Panel

If your console terminal supports the DEC Multinational Character Set and does not respond in the language you want to use, do the following:

- Press the system power switch to 0 (OFF).
- Reset the power-up mode switch to the language inquiry setting (face in profile).
- Press the system power switch to 1 (ON).

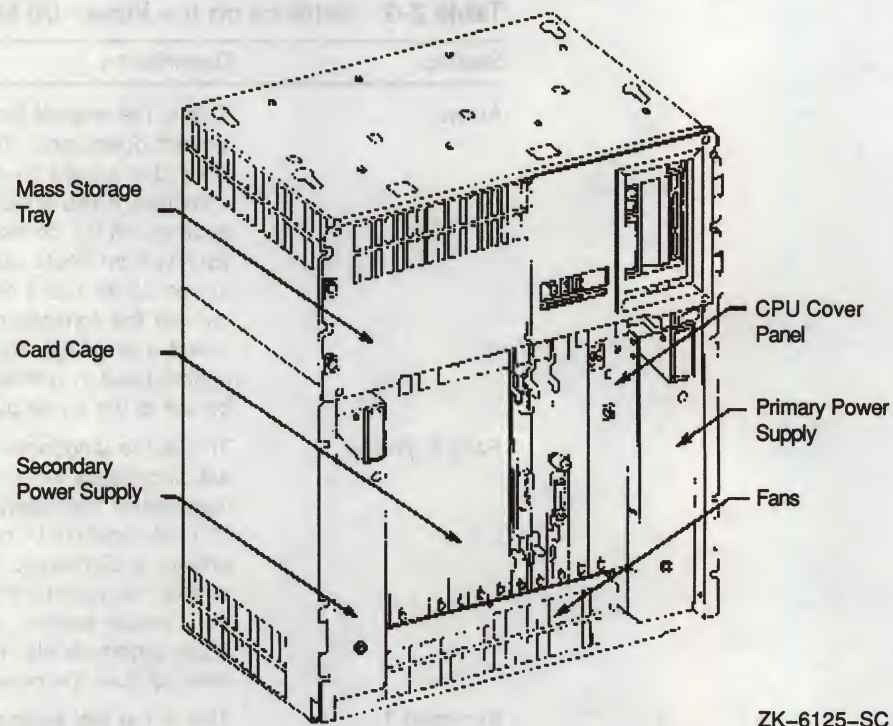
At the prompt, select the language and turn the power-up mode switch to the arrow setting.

Figure 2-8 illustrates the power-up mode switch.

2.6 Controls and Indicators on the BA200 series Model

All controls and indicator lights on the BA200 series model are located on the front of the system. All BA200 series models have a power supply on both the right and the left. All models also have two sets of power supply controls and indicator lights. Figure 2-9 illustrates in detail the front of the BA200 series model.

Figure 2-9 Front View of the BA200 series Chassis



2.6 Controls and Indicators on the BA200 series Model

Table 2-3 describes the controls on the BA200 series model.

Table 2-3 Controls on the BA200 series Model

Control	Description
Power switch	Setting this switch to 1 turns on the power; setting it to 0 turns off the power. This switch is located below the tape drive. The power switch glows orange when power to the system is turned on.
Halt button	The BA200 series model has <i>no</i> HALT button. If you enable halts, press the F5 (BREAK) key on the console terminal keyboard to stop the system.
Fixed disk write-protect switches	These switches are located on the mass storage tray next to the tape drive, above the fixed disk activity lights. When these switches are set to the down position, the disk is write-protected. The system can read data from the fixed disk but cannot modify data or write new data to the fixed disk.
Tape drive LOAD/UNLOAD button	This button is located above the cartridge-release handle on the tape drive. It contains a red light. When this button is pressed in, it is in the LOAD position. When this button is released, it is in the UNLOAD position.
Power supply reset button	This button enables you to restart the system after a power interruption without turning off the I/O system power switch. You also can use this recessed reset button to restart the power system if the circuit breaker is tripped. Use the eraser end of a pencil or a nonconductive small tool to press this button.
Power supply circuit breaker	This circuit breaker is located near the bottom of the power supply. It protects the system from electrical surges. When tripped, the circuit breaker is in the out position. To reset, press the circuit breaker in. Then press the power supply reset button.
Halt Enable/Disable switch	This switch is located on the upper left side of the CPU cover panel. It is labeled with an encircled triangle, the international symbol for halt. When the switch is down (dot outside the circle), halts are disabled. When the switch is up (dot inside the circle), halts are enabled. When you enable halts, press the F5 (BREAK) key on the console terminal keyboard to stop the system and transfer control to the console program. When you disable halts, the system boots automatically.
Baud rate control knob	The BA200 series model has no baud rate control knob. The baud rate is preset to 9600 baud. Digital recommends that you do not change the baud rate setting. If it is absolutely necessary for you to change the baud rate, see the technical information shipped with your system for instructions.

(continued on next page)

MicroVAX II Hardware

2.6 Controls and Indicators on the BA200 series Model

Table 2-3 (Cont.) Controls on the BA200 series Model

Control	Description
Power-up mode switch	This switch is located on the CPU cover panel to the right of the Halt Enable/Disable switch. This rotary switch lets you select one of three settings that indicates a power-up mode. Table 2-5 describes these settings.

Table 2-4 describes the indicator lights on the BA200 series model.

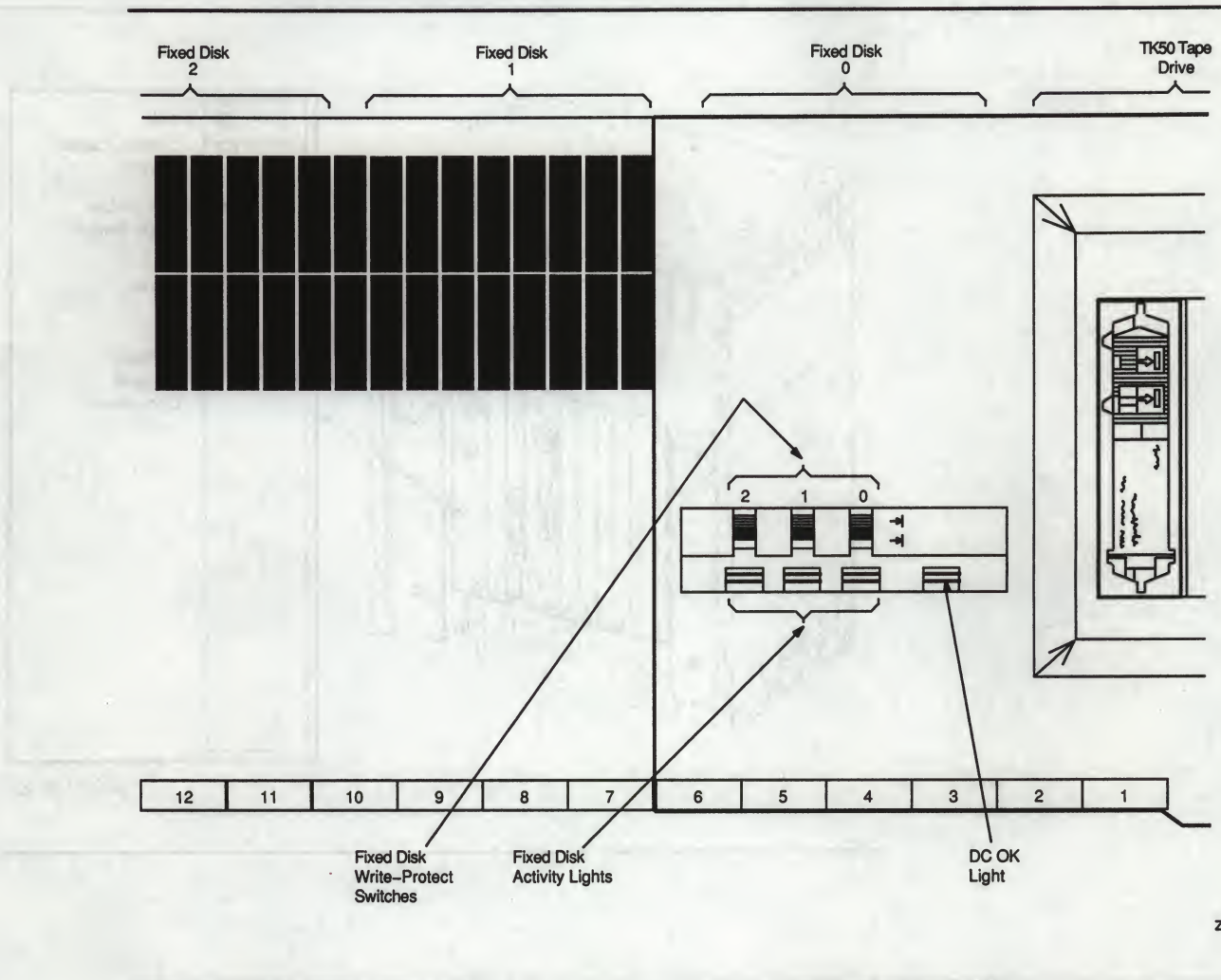
Table 2-4 Indicator Lights on the BA200 series Model

Control	Description				
DC OK light	<p>This light is located on the mass storage tray to the right of the fixed disk activity lights.</p> <table><tr><td>Glows</td><td>The DC voltages are within tolerance levels.</td></tr><tr><td>Does not glow</td><td>There is a problem with one of the power supplies. Check the DC OK light on each power supply to determine which power supply has failed.</td></tr></table>	Glows	The DC voltages are within tolerance levels.	Does not glow	There is a problem with one of the power supplies. Check the DC OK light on each power supply to determine which power supply has failed.
Glows	The DC voltages are within tolerance levels.				
Does not glow	There is a problem with one of the power supplies. Check the DC OK light on each power supply to determine which power supply has failed.				
Power supply DC OK light	This light glows green if the DC voltages to the power supply are present and within tolerance levels. If this light does not glow, there is a problem with the power supply. Turn off your system and call Digital Field Service.				
Fixed disk activity lights	<p>There are three green activity lights, one for each fixed disk. These lights are located on the mass storage tray next to the tape drive, below the fixed disk write-protect switches.</p> <table><tr><td>Steady glow</td><td>Power to the system is turned on.</td></tr><tr><td>Quick blink</td><td>Data is being read from or written to the corresponding fixed disk.</td></tr></table>	Steady glow	Power to the system is turned on.	Quick blink	Data is being read from or written to the corresponding fixed disk.
Steady glow	Power to the system is turned on.				
Quick blink	Data is being read from or written to the corresponding fixed disk.				
Tape drive activity light	<p>This green light is located below the tape drive cartridge-release handle.</p> <table><tr><td>Blink</td><td>Drive is active. Data is being written to or read from the tape.</td></tr><tr><td>Steady glow</td><td>Drive is either empty or inactive and positioned at the beginning of the tape. If a tape is in the drive and this light does not glow, the drive is inactive but the tape is not positioned at its beginning.</td></tr></table>	Blink	Drive is active. Data is being written to or read from the tape.	Steady glow	Drive is either empty or inactive and positioned at the beginning of the tape. If a tape is in the drive and this light does not glow, the drive is inactive but the tape is not positioned at its beginning.
Blink	Drive is active. Data is being written to or read from the tape.				
Steady glow	Drive is either empty or inactive and positioned at the beginning of the tape. If a tape is in the drive and this light does not glow, the drive is inactive but the tape is not positioned at its beginning.				

Figure 2-10, Figure 2-11, and Figure 2-12 are detailed illustrations of the controls and indicator lights described in Table 2-3 and Table 2-4.

2.6 Controls and Indicators on the BA200 series Model

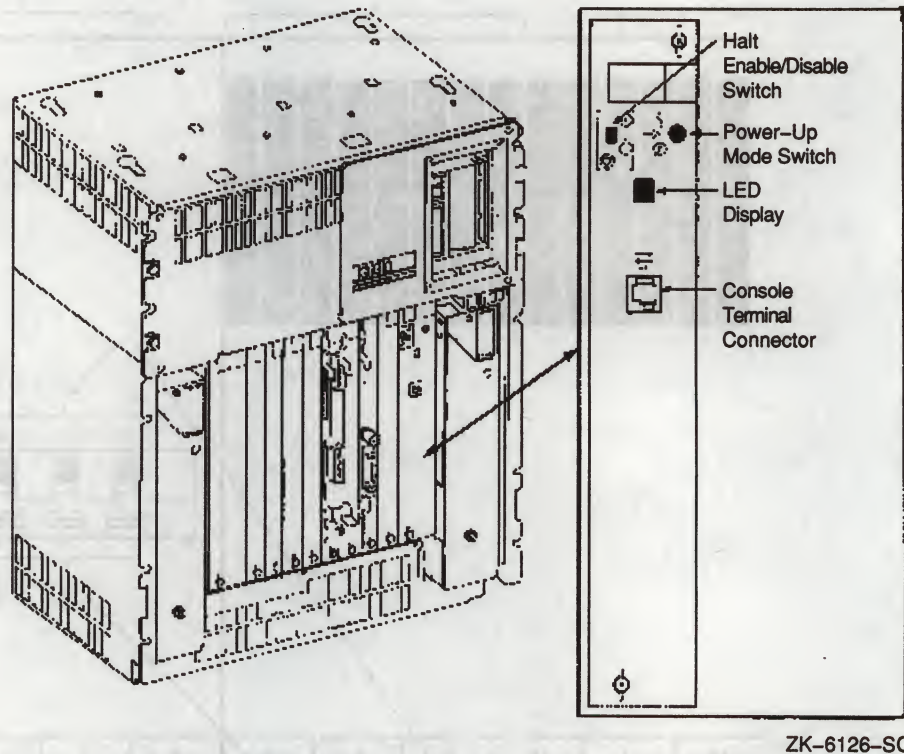
Figure 2-10 Mass Storage Tray - BA200 series



MicroVAX II Hardware

2.6 Controls and Indicators on the BA200 series Model

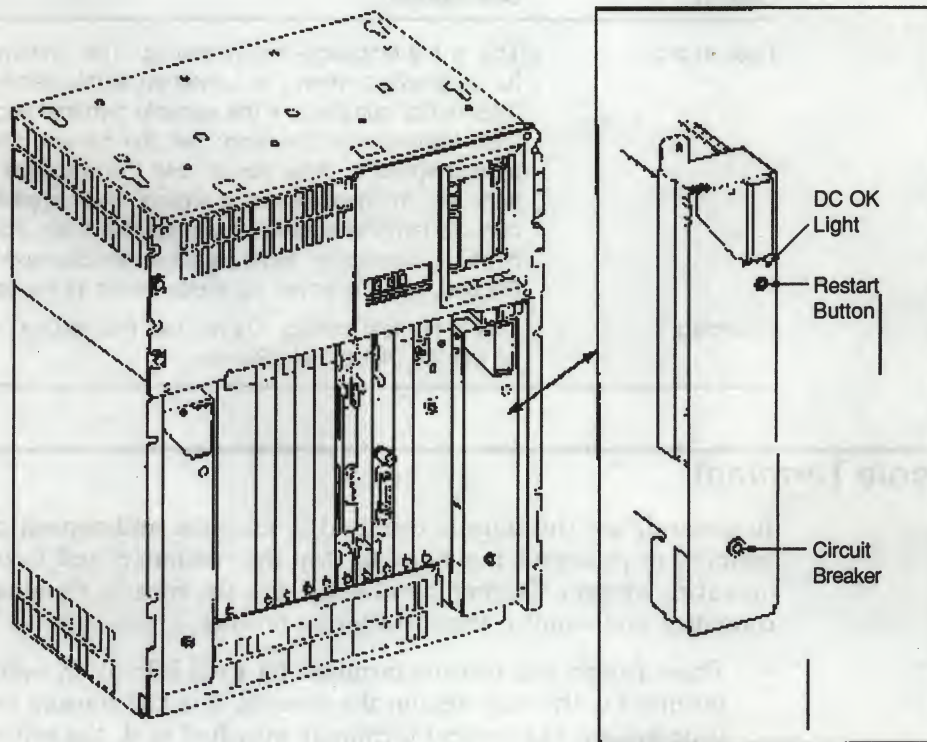
Figure 2-11 CPU Cover Panel - BA200 series



ZK-6126-SC

2.6 Controls and Indicators on the BA200 series Model

Figure 2-12 Power Supply - BA200 series



ZK-6127-SC

Table 2-5 describes the settings of the power-up mode switch on the BA200 series model.

Table 2-5 Settings of the Power-Up Mode Switch on the BA200 series Model

Setting	Description
Arrow	This is the original factory setting and the setting for normal system operations. The system performs full diagnostics when it is turned on at this setting. After the diagnostics complete, if you enable halts, the console-mode prompt (>>>) appears on the console terminal screen. If you disable halts, your system boots automatically. If the system has been turned off for many days, however, you might be asked to choose the console-mode language you want to use.

(continued on next page)

MicroVAX II Hardware

2.6 Controls and Indicators on the BA200 series Model

Table 2-5 (Cont.) Settings of the Power-Up Mode Switch on the BA200 series Model

Setting	Description
Face in profile	This is the language-inquiry setting. The system performs full diagnostics when it is turned on at this setting. After the diagnostics complete, if the console terminal supports the DEC Multinational Character Set, the console-mode language prompt appears. After you choose the language, you enable halts and the console-mode prompt (>>>) appears on the console terminal screen. If you disable halts, your system boots automatically. First, select a console-mode language. Second, turn the power-up mode switch to the arrow.
Encircled T	This is the test setting. Do not use this setting. It is reserved for use by Digital Field Service.

2.7 The Console Terminal

In general, use the console terminal to examine and deposit data in memory or processor registers, to stop the computer, and to boot the operating system. During installation, use the console terminal to boot the computer and monitor the installation process.

- There is only one console terminal for each MicroVAX system. If your terminal is the only one on the system, it is the console terminal. If your system has several terminals attached to it, the console terminal is the one attached to the port located on the CPU panel.

On the BA200 series model, the console terminal is connected directly to the CPU cover panel at the modified modular jack labeled A-1.

- If you have a VAXstation, the workstation display monitor is the console terminal.

The console terminal runs in two different modes: console mode and program mode.

- **Console mode**—When the console terminal is in console mode, the VMS operating system is not running and the CPU is stopped. The console-mode prompt (>>>) is displayed. You can control and monitor system operations.

To go from console mode to program mode, boot the VMS operating system as described in Chapter 6.

- **Program mode**—When the console terminal is in program mode, the VMS operating system is running and the dollar-sign prompt (\$) is displayed. You can enter DCL commands, run programs, and receive system messages.

If the VMS operating system is running and you want to go to console mode, follow the shutdown procedure described in Chapter 6.

2.8 Turning on the Console Terminal

Turn on the power to the console terminal before turning on the power to the MicroVAX system. To turn on the console terminal, use the following procedure:

- 1 Make sure that the cable between the console terminal and the system is connected properly.
- 2 Make sure that the power cable is connected to the terminal and plugged in to a wall outlet.
- 3 Turn the terminal power switch to the ON position.

The terminal power switch is located in different positions on different types of console terminals. Table 2-6 describes how to turn the power on to some supported terminals and how each terminal should respond. If your terminal is not listed, see the owner's manual for your terminal.

Table 2-6 Turning On the Console Terminal

Terminal Type	Power Switch Location	Terminal Response
VT100-series terminal	The power switch is located on the back left.	The terminal beeps and a blinking cursor (either a rectangle or an underscore) is visible on the screen.
VT220 terminal	The power switch is located on the back left.	The terminal beeps and displays VT220 OK in the middle of the screen.
VT240 terminal	The power switch is located on the left corner at the front of the accompanying terminal box. (On VT200-series graphics terminals, there also is a power switch on the back right of the terminal screen.)	The terminal beeps and displays VT240 OK in the middle of the screen.
LA34 hardcopy terminal	The power switch is located on the back left.	The type head moves to the first position on a line.
LA120 hardcopy terminal	The power switch is located on the front left, halfway down the stand.	The type head moves to the first position on a line.

Note: If you have a VAXstation, the workstation display monitor is the console terminal.

MicroVAX II Hardware

2.8 Turning on the Console Terminal

2.8.1 Checking the Baud Rate on the Console Terminal

If you are booting with a VT100-series or VT200-series terminal, you must check the baud rate of the console terminal using the terminal set-up screens.

Both the transmit speed and receive speed should be set to 9600 baud. For any other type of console terminal, see the owner's manual to determine the values of the transmit and receive speeds. Reset both speeds if they are not equal to 9600 baud.

On a VT100-series terminal, use the following procedure to check the baud rate on the console terminal:

- 1 Press the SET-UP key once.
- 2 Press the 5 key that is located above the letter T on the keyboard.
The fields T SPEED and R SPEED appear in the bottom right-hand corner of your terminal.
- 3 If the transmit and receive speeds are 9600 baud, press the SET-UP key once.
- 4 If the values for T SPEED and R SPEED are not 9600 baud, see the owner's manual for your terminal for instructions on setting the baud rate.

Note: If your console terminal is an LA120, it must be set to 8 bits, no parity transmit, and no parity receive. See the owner's manual provided with your LA120 terminal for instructions on checking these settings.

On a VT200-series terminal, use the following procedure to check the baud rate on the console terminal:

- 1 Press the F3 key once.
- 2 Press the right arrow twice.
- 3 Press the ENTER key once.
This causes the communications set-up screen, which includes the fields Transmit=X and Receive=X, to appear on your terminal.
- 4 If the transmit and receive speeds are 9600 baud, press F3 once.
- 5 If the transmit and receive speeds are not 9600 baud, see the owner's manual for your terminal for instructions on setting the baud rate.

2.9 The Tape Cartridge Drive

A tape drive is located on the front of some MicroVAX II computers. The tape drive is either horizontal or vertical depending on the system model.

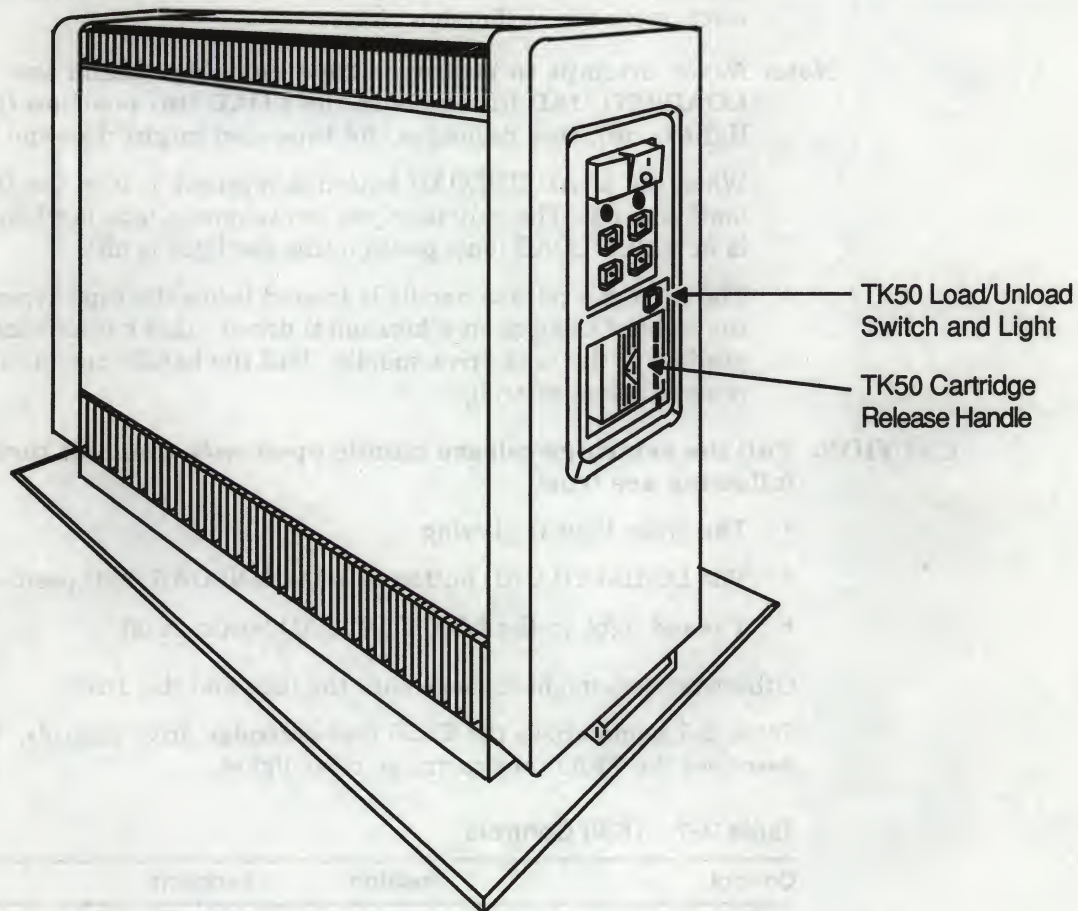
The device name of the tape drive is MUA0.

MicroVAX II Hardware

2.9 The Tape Cartridge Drive

Figure 2-13 shows a vertical tape drive.

Figure 2-13 A Vertical Tape Cartridge Drive



ZK-5153-GE

When using the tape drive shown in Figure 2-13, you should be aware of the following:

- The green light blinks when the tape in the drive is actually moving (being read from or written to). If a tape cartridge is in the drive and this light is off, the drive is inactive and the tape is not positioned at its beginning. *Never* attempt to remove a tape cartridge when the green light is blinking or when it is off; this damages the tape and may damage the drive. The only time you can remove a tape is when the green light is glowing.

The green light glows when the drive is empty. It also glows when the drive is inactive and positioned at the beginning of a tape.

- The LOAD/UNLOAD button controls the loading of the tape.

MicroVAX II Hardware

2.9 The Tape Cartridge Drive

When the button is pressed in, it is in the LOAD position. The red light on this button glows red when the tape is loaded. It blinks slowly when the tape is rewinding. It blinks quickly when there is a tape error (for some reason the tape could not be read). To clear a tape error, press the button four times.

Note: *Never attempt to remove a tape cartridge while the LOAD/UNLOAD button is in the LOAD (in) position (the red light is on); this damages the tape and might damage the drive.*

When the LOAD/UNLOAD button is released, it is in the UNLOAD (out) position. The only time you can remove a tape is when the button is in the UNLOAD (out) position (the red light is off).

- The cartridge-release handle is located below the tape access slot (to the right of the slot on a horizontal drive). This handle controls the position of the tape drive spindle. Pull the handle open to insert or remove a tape cartridge.

CAUTION: Pull the cartridge-release handle open *only* when all three of the following are true:

- The green light is glowing
- The LOAD/UNLOAD button is in the UNLOAD (out) position
- The red light on the LOAD/UNLOAD button is off

Otherwise, you might damage both the tape and the drive.

Table 2-7 summarizes the TK50 tape-cartridge drive controls. Table 2-8 describes the TK50 tape-cartridge drive lights.

Table 2-7 TK50 Controls

Control	Position	Function
LOAD/UNLOAD button	In	Loads the tape (15 seconds—3 1/2 minutes).
	Out	Rewinds and unloads the tape.
Cartridge release handle	Open	Lets you insert or remove a tape after rewind and unload operations are complete.
	Closed	Locks tape in operating position.

Table 2-8 TK50 Indicator Lights

Red Light	Green Light	Condition
Off	Off	No power to the tape drive.
Off	On	Safe to move cartridge-release handle. Power is turned on.

(continued on next page)

MicroVAX II Hardware

2.9 The Tape Cartridge Drive

Table 2-8 (Cont.) TK50 Indicator Lights

Red Light	Green Light	Condition
On	Off	Do not move the cartridge-release handle. One of the following conditions exists: <ul style="list-style-type: none"> • Power-on self-test is occurring. • Cartridge is inserted but handle is still in the open position. • Tape is loading or unloading. • Tape is stopped.
On	On	Tape loaded successfully.
On	Blinking	Tape is moving (except rewind). Read/write commands are being processed. Irregular fast blinking means tape calibration is occurring.
Blinking	Blinking	Tape is rewinding.
Rapid Blinking	Off	A fault is occurring. Press and release the LOAD/UNLOAD button four times. If the problem persists, do not attempt to remove the tape cartridge. Call Digital Field Service.

2.10 The Diskette Drive

Most MicroVAX II systems come with diskette drives. Diskette drives let you store data on or copy data from removable diskettes.

Two types of diskette drives are available:

- The RX50 diskette drive
- The RX33 diskette drive

CAUTION: Use an RX33 diskette only in an RX33 diskette drive. Because RX33 and RX50 diskettes have incompatible formats, using an RX33 diskette in an RX50 diskette drive might destroy the data on the diskette and might damage the diskette. You can use an RX50 diskette in an RX33 diskette drive.

This guide describes only the RX33 diskette drive. See the hardware information for your system for a description of the RX50 diskette drive.

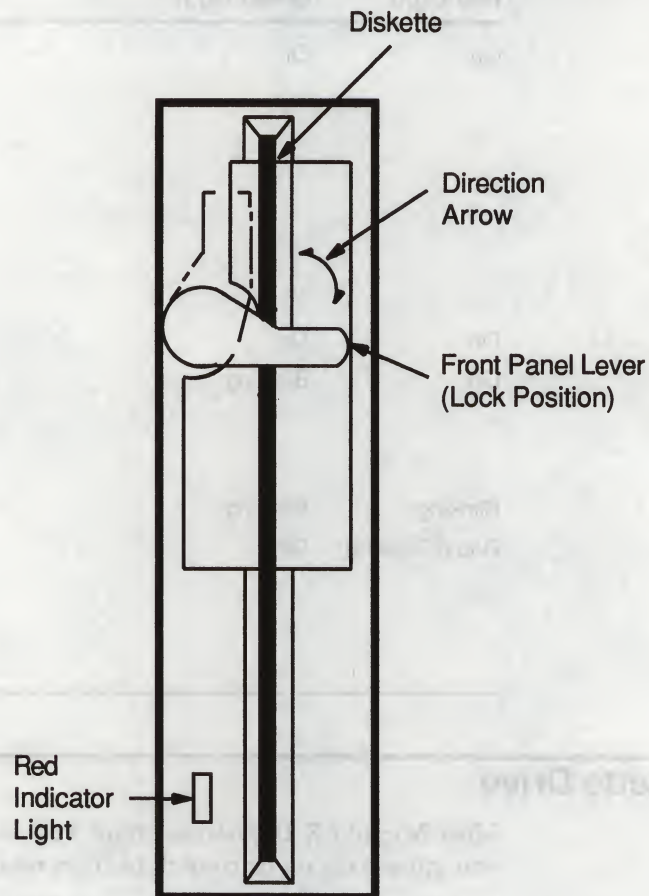
The RX33 diskette drive is a single drive. It has an access slot with a diskette-drive lever that lets you insert and remove floppy diskettes.

Figure 2-14 shows the RX33 diskette drive.

MicroVAX II Hardware

2.10 The Diskette Drive

Figure 2-14 The RX33 Diskette Drive



ZK-6686-GE

When using the diskette drive shown in Figure 2-14, you should be aware of the following:

- The activity light glows red when the floppy diskette in the drive is moving (being read from or written to).

CAUTION: *Never attempt to remove a floppy diskette from the drive when the red activity light glows; this damages the floppy diskette and might damage the drive.*

- The diskette-drive lever holds the floppy diskette in the drive. After you insert the floppy diskette in the drive, turn the lever until it is perpendicular to the access slot. When you turn the lever until it is parallel to the access slot, the floppy diskette pops out of the drive. When the activity light glows red, do not turn the lever until it is parallel to the access slot.

3 Using Tape Cartridges and Floppy Diskettes

This chapter describes how to use the tape cartridge and floppy diskette drives. If you have a MicroVAX II system, you can have either a floppy diskette or tape cartridge drive or both.

3.1 Tape Cartridges

Follow these guidelines when using tape cartridges:

- Tape cartridges come in clear plastic protective cases. You should keep tape cartridges in these cases when you are not using them.
- The label slot holds the label that provides information about the contents of the tape cartridge. Label a tape cartridge if you will copy files to it (distribution tape cartridges are labeled already).

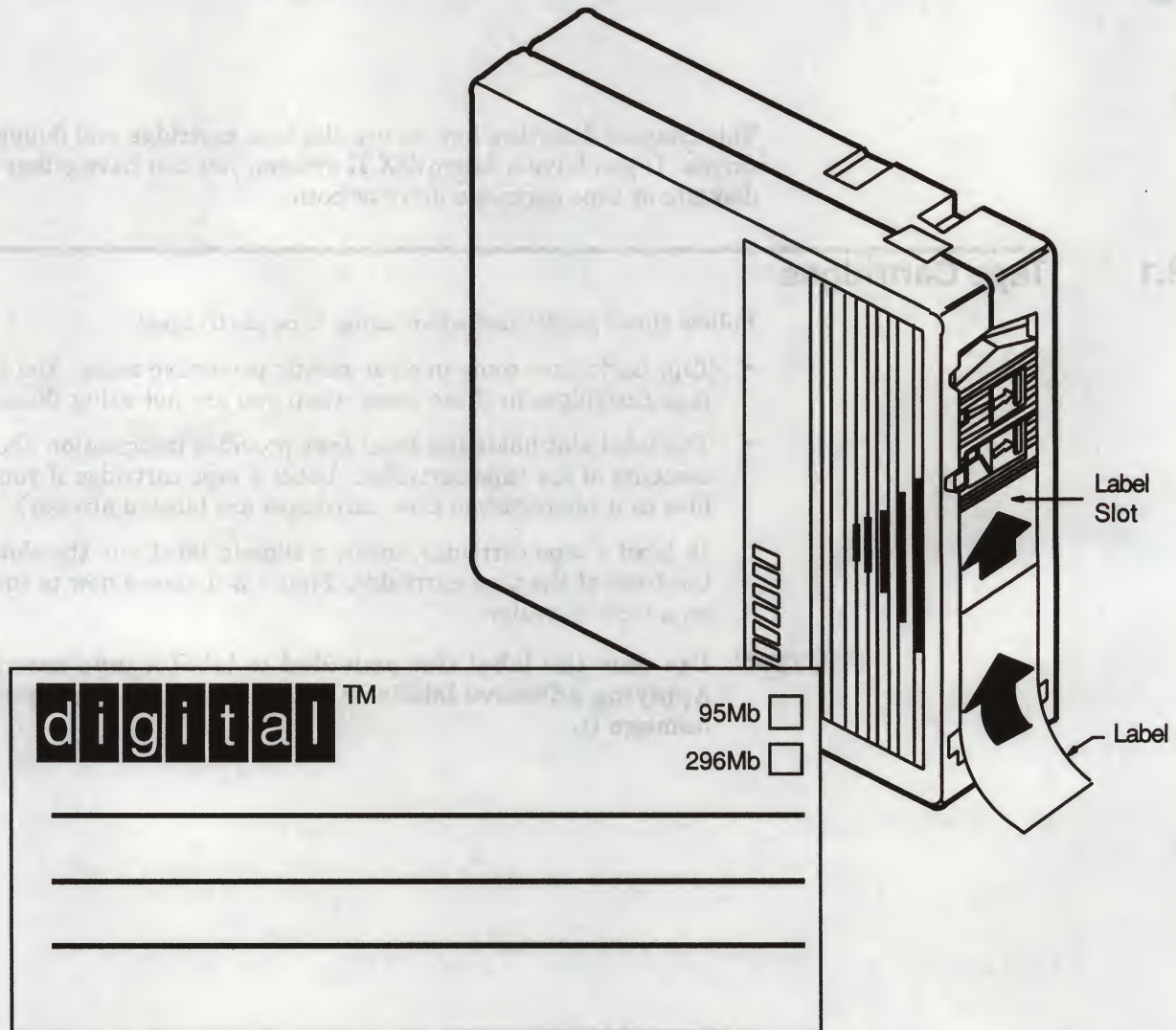
To label a tape cartridge, insert a slide-in label into the slot located on the front of the tape cartridge. Figure 3-1 shows how to insert a label on a tape cartridge.

CAUTION: Use only the label slot provided to label a tape cartridge. Applying adhesive labels or writing on the tape cartridge can damage it.

Using Tape Cartridges and Floppy Diskettes

3.1 Tape Cartridges

Figure 3-1 Inserting a Label on a Tape Cartridge



ZK-6520-GE

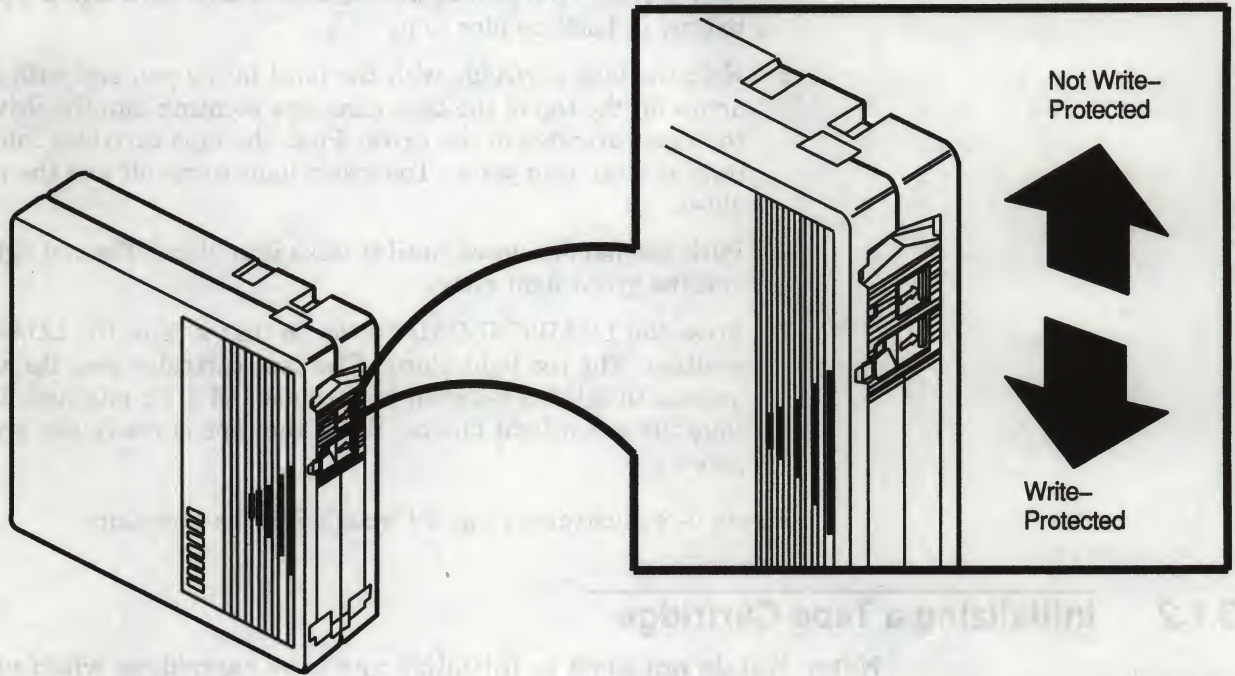
- The write-protect switch is a movable switch on the tape cartridge that controls whether you can write to the tape. To write-protect a tape cartridge, slide the write-protect switch toward the label slot. An orange rectangle is visible if the tape cartridge is write-protected.

Always write-protect the distribution tape cartridge before an installation. Figure 3-2 shows how to write-protect a tape cartridge.

Using Tape Cartridges and Floppy Diskettes

3.1 Tape Cartridges

Figure 3-2 Positioning the Write-Protect Switch



ZK-6521-GE

3.1.1 Inserting a Tape Cartridge

To insert a tape cartridge in the drive, use the following procedure:

- 1 Make sure the tape cartridge drive is empty. If the VMS operating system is not running, go to step 2.

If the VMS operating system is running and if a tape cartridge is in the drive already, enter the following command and press RETURN:

```
$ SHOW DEVICE MUA0
```

If the display indicates that the device status of the tape cartridge is MOUNTED, you must dismount the tape cartridge before removing it from the drive. Follow the directions in Section 3.1.4 to dismount the tape cartridge. Then follow the directions in Section 3.1.5 to remove a tape cartridge.

- 2 Press the LOAD/UNLOAD button so that it is in the UNLOAD (out) position. The green light glows steadily and the red light is off.

CAUTION: Never pull open the cartridge-release handle unless the green light glows, the red light is off, and the LOAD/UNLOAD button is in the UNLOAD (out) position; you might damage the drive.

- 3 Pull open the cartridge-release handle.

Using Tape Cartridges and Floppy Diskettes

3.1 Tape Cartridges


- 
- 4 Remove the tape cartridge from its plastic case. You should write-protect a tape cartridge containing software that you will install on your system. You should write-enable a tape cartridge if you are going to copy or back up files to it.
 - 5 Hold the tape cartridge with the label facing you and with the large arrow on the top of the tape cartridge pointing into the drive. Insert the tape cartridge in the drive. Push the tape cartridge into the drive until it locks into place. The green light turns off and the red light glows.
 - 6 Push the handle closed until it locks into place. The red light turns off and the green light glows.
 - 7 Press the LOAD/UNLOAD button so that it is in the LOAD (in) position. The red light glows. The tape cartridge goes through a load process that takes between 15 seconds and 3 1/2 minutes. During this time the green light blinks. When the tape is ready, the green light glows.

Figure 3-3 illustrates steps 4 through 7 of the procedure.

3.1.2 Initializing a Tape Cartridge

Note: You do not need to initialize any tape cartridges when you install the VMS operating system.

Initializing a tape cartridge does the following:

- Erases any data stored on the tape cartridge
- Assigns a volume label to the tape cartridge
- Prepares the tape cartridge to store VMS files

You should initialize a tape cartridge before using it for the first time. Initialize an old tape cartridge to erase its contents.

Before you initialize a tape cartridge, make sure that the account you are logged in to has the volume protection (VOLPRO) privilege. Make sure the tape cartridge is write-enabled.

CAUTION: Do not initialize a tape cartridge that contains operating system software or files that you want to save. The INITIALIZE command erases the contents of the tape cartridge.

To initialize a tape cartridge, enter the INITIALIZE command in the following format and press RETURN:

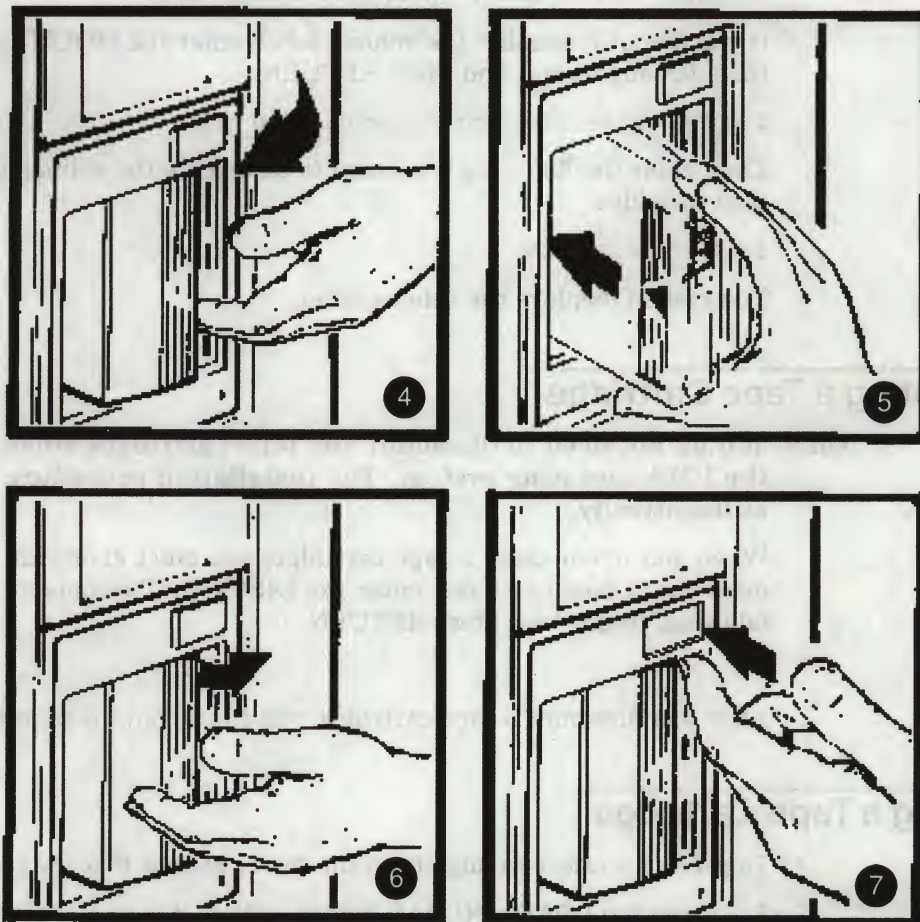
```
$ INITIALIZE MUA0 volume-label
```

where *volume-label* is a one-to-six character name. Write the volume label of the tape cartridge on the tape label. You will need to know the volume label when you use the tape.

Using Tape Cartridges and Floppy Diskettes

3.1 Tape Cartridges

Figure 3-3 Inserting a Tape Cartridge



ZK-6622-SC

For example, the following command initializes a tape cartridge and labels it APR90:

```
$ INITIALIZE MUA0 APR90
```

3.1.3 Mounting a Tape Cartridge

Note: You do not need to mount any tape cartridges when you install the VMS operating system. The installation procedure does this automatically.

After you insert a tape cartridge (and initialize it, if it is new), you must mount it to make it available to the system. To mount a tape cartridge, enter the MOUNT command in the following format and press RETURN:

```
$ MOUNT MUA0 volume-label
```

where *volume-label* is a one-to-six character name.

Using Tape Cartridges and Floppy Diskettes

3.1 Tape Cartridges

If you do not specify the correct volume label when you mount the tape cartridge, the system displays the following message:

```
%MOUNT-F-INCVOLLABEL, incorrect volume label
```

If you do not remember the volume label, enter the MOUNT command in the following format and press RETURN:

```
$ MOUNT/OVERRIDE=IDENTIFICATION MUAO
```

Then enter the following command to determine the volume label of the tape cartridge:

```
$ SHOW DEVICE MUAO
```

The system displays the volume label.

3.1.4 Dismounting a Tape Cartridge

Note: You do not need to dismount any tape cartridges when you install the VMS operating system. The installation procedure does this automatically.

When you finish using a tape cartridge, you must dismount it. To dismount a tape cartridge, enter the DISMOUNT command in the following format and press RETURN:

```
$ DISMOUNT MUAO
```

After you dismount a tape cartridge, you can remove it from the drive.

3.1.5 Removing a Tape Cartridge

To remove a tape cartridge from the drive, use the following procedure:

- 1 Press the LOAD/UNLOAD button so that it is in the UNLOAD (out) position. If the tape is not rewound, the red and green lights blink slowly as the tape rewinds. When the tape is completely unloaded, the red light turns off and the green light glows.

CAUTION: Never pull open the cartridge-release handle unless the green light glows, the red light is off, and the LOAD/UNLOAD button is in the UNLOAD (out) position; you might damage the tape drive.

- 2 Pull open the cartridge-release handle. The tape cartridge ejects partially.
- 3 Remove the tape cartridge and put it in its plastic case.
- 4 Push the handle closed until it locks firmly into place.

3.2 Floppy Diskettes

You can use either RX33 or RX50 diskettes in the RX33 diskette drive. Table 3-1 shows the differences between these two types of diskettes.

Table 3-1 Differences Between RX33 and RX50 Diskettes

Diskette	Description	Storage Capacity	Preformatted?
RX33	Gray or black plastic jacket; no arrow	2400 blocks	No
RX50	Black plastic jacket; red arrow	800 blocks	Yes

Figure 3-4 shows an RX33 diskette.

CAUTION: Use an RX33 diskette only in an RX33 diskette drive. Because RX33 and RX50 diskettes have incompatible formats, using an RX33 diskette in an RX50 diskette drive might destroy the data on the diskette and might damage the diskette. You can use an RX50 diskette in an RX33 diskette drive.

Also, format an RX50 diskette using only Field Service diagnostic tools. Consider discarding an RX50 diskette rather than formatting it. For more information, contact Digital Field Service.

When using the diskette shown in Figure 3-4, you should be aware of the following:

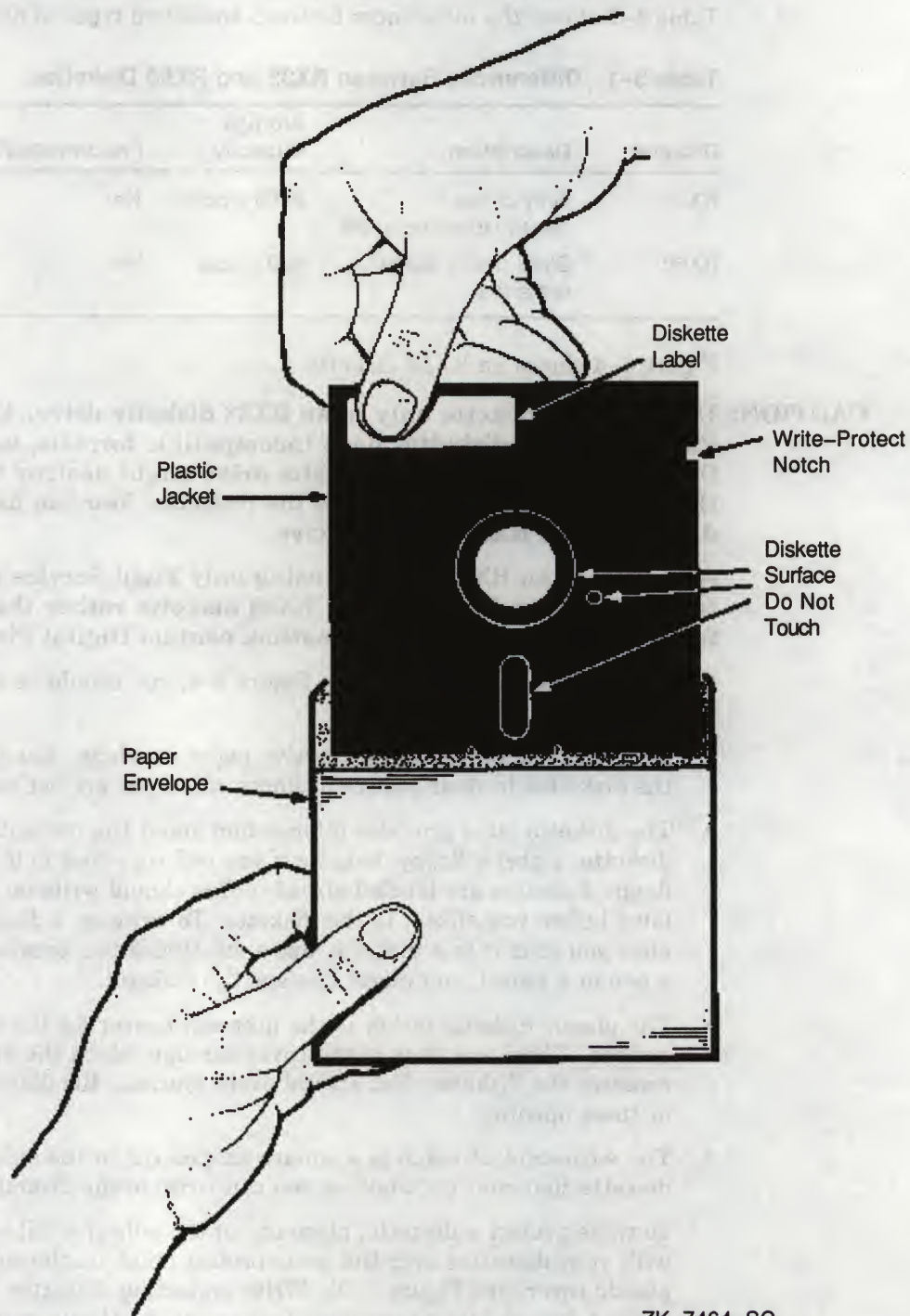
- Each diskette comes in a protective paper envelope. You should keep the diskettes in their paper envelopes when you are not using them.
- The diskette label provides information about the contents of the diskette. Label a floppy diskette if you will copy files to it (distribution floppy diskettes are labeled already). You should write on the diskette label before you affix it to the diskette. To write on a diskette label after you affix it to a diskette, use a felt-tipped pen because if you use a pen or a pencil, you might damage the diskette.
- The plastic diskette jacket is the protective cover for the diskette surface. There are slots in the cover through which the drive head accesses the diskette. You should avoid touching the diskette surface at these openings.
- The write-protect notch is a square-shaped cut in the side of the diskette that controls whether you can write to the diskette.

To write-protect a diskette, place one of the adhesive foil tabs supplied with your diskettes over the write-protect notch on the side of the plastic cover (see Figure 3-5). Write-protecting diskettes guards against loss of data or accidental overwriting. *Always* write-protect distribution diskettes before an installation.

Using Tape Cartridges and Floppy Diskettes

3.2 Floppy Diskettes

Figure 3-4 The RX33 Diskette

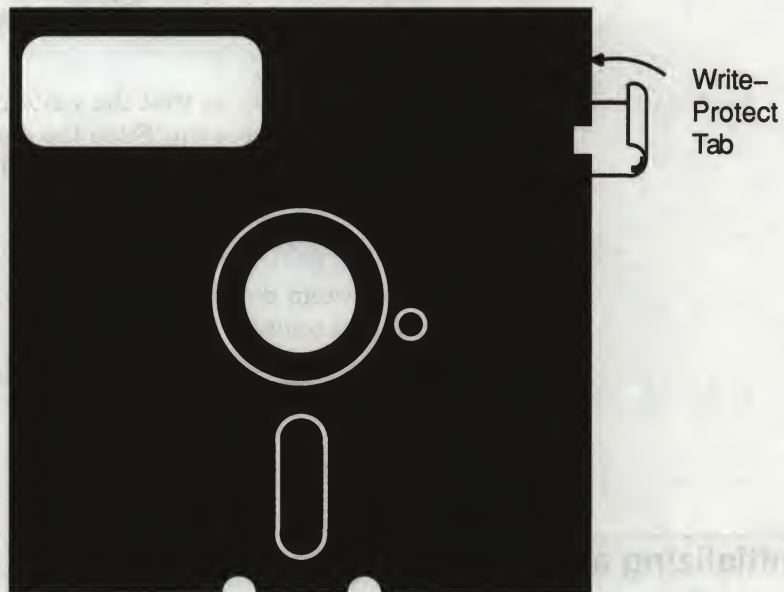


Using Tape Cartridges and Floppy Diskettes

3.2 Floppy Diskettes

To write-enable a diskette, make sure that no adhesive foil tab covers the diskette write-protect notch. When the write-protect notch is uncovered, you can add, change, or delete information on the diskette. You should write-enable a floppy diskette if you will copy or back up files to it.

Figure 3-5 The Diskette Write-Protect Tab



ZK-5796-GE

3.2.1 Inserting an RX33 Diskette

To insert a diskette in the diskette drive, use the following procedure:

- 1 Make sure that the diskette drive is empty. If the VMS operating system is not running, go to step 2.

If the VMS operating system is running and if a diskette is in the drive already, use the **SHOW DEVICE** command to see whether the diskette is mounted. For example, if the device name of the diskette drive is **DUA2**, enter the following command and press **RETURN**:

```
$ SHOW DEVICE DUA2
```

If the display indicates that the device status of the floppy diskette is **MOUNTED**, you must dismount the floppy diskette before removing it from the drive. See Section 3.2.4 to dismount the floppy diskette. Turn the diskette-drive lever until it is parallel to the access slot. Remove the diskette from the drive and place the diskette in its paper envelope.

Using Tape Cartridges and Floppy Diskettes

3.2 Floppy Diskettes

CAUTION: Never attempt to remove a floppy diskette from the drive when the red light glows or blinks; you might damage the diskette drive.

- 2 Remove the diskette to be inserted in the diskette drive from its paper envelope. When you remove the diskette, make sure you handle only the edges. Do not remove the plastic cover and do not touch exposed surfaces of the diskette.
- 3 Write-protect a floppy diskette that contains software you will install on your system. Write-enable a floppy diskette if you will copy or back up files to it.
- 4 Hold the diskette so that the write-protect notch is to your left and the diskette label faces up. Slide the diskette in the drive until it clicks in place. If the diskette is aligned incorrectly, the system might display the following message:

`%INIT-F-MEDOFL, medium is offline`

If the system displays this message, remove the diskette from the drive and reinsert it.
- 5 Turn the diskette-drive lever until it is perpendicular to the access slot.

Figure 3-6 illustrates the procedure.

3.2.2 Initializing and Formatting an RX33 Diskette

Note: You do not need to initialize and format any floppy diskettes when you install the VMS operating system.

The INITIALIZE command does the following:

- Erases any data stored on the floppy diskette
- Assigns a volume label to the floppy diskette
- Prepares the floppy diskette to store VMS files

You should initialize and format a new floppy diskette before using it the first time. You should initialize and format an old floppy diskette to erase its contents.

Before you initialize and format a floppy diskette, make sure that the account you are logged in to has the volume protection (VOLPRO) privilege. Make sure the floppy diskette is write-enabled.

CAUTION: Do not initialize and format an RX33 floppy diskette that contains operating system software or files that you want to save. The INITIALIZE command erases the contents of the diskette.

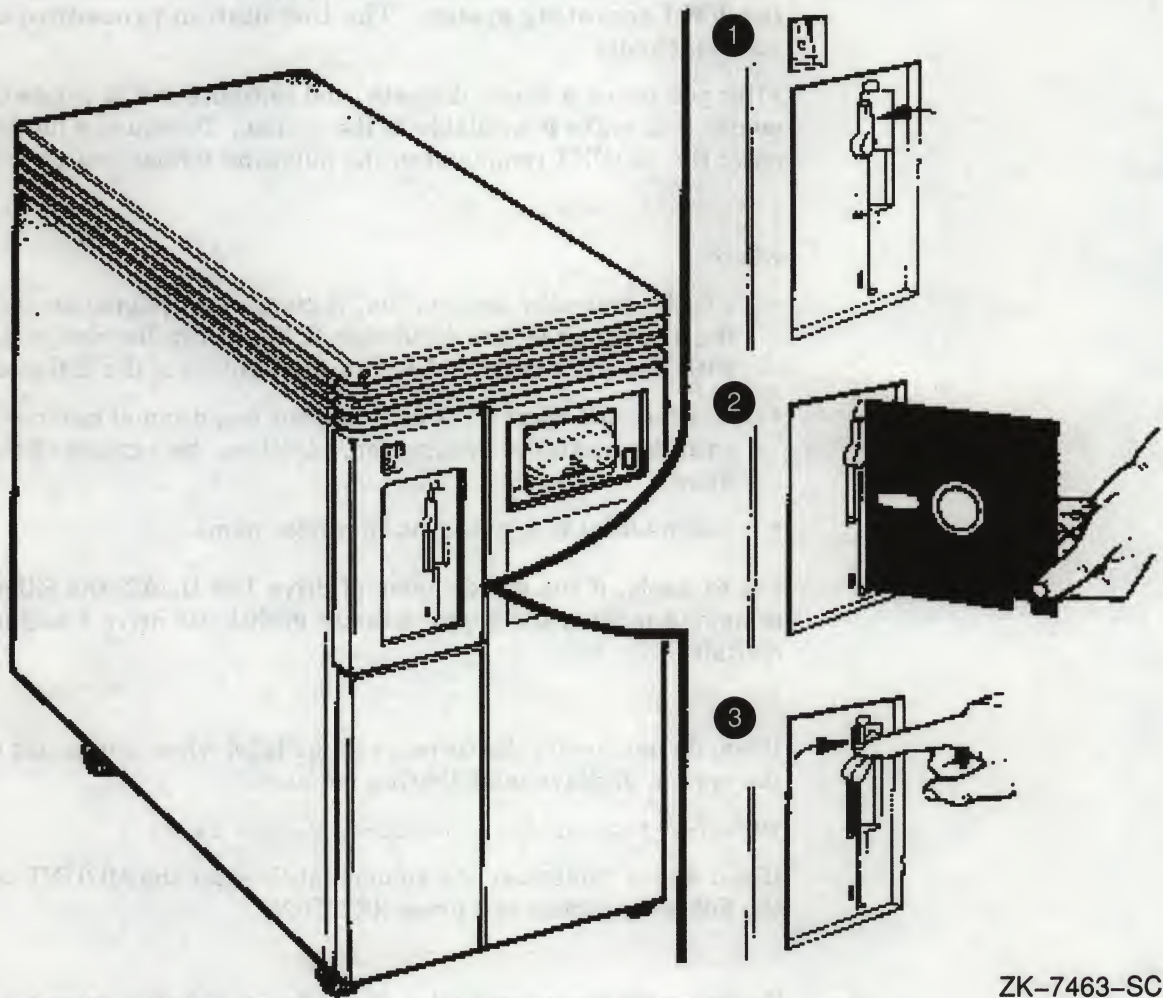
To initialize and format an RX33 floppy diskette, enter the INITIALIZE command in the following format and press RETURN:

```
$ INITIALIZE/DENSITY=DOUBLE DUcu volume-label
```


Using Tape Cartridges and Floppy Diskettes

3.2 Floppy Diskettes

Figure 3-6 Inserting an RX33 Diskette



ZK-7463-SC

where:

- *c* is the *controller designation*. A controller designation can be one of the alphabetic letters A through Z. The controller designation, along with the unit number, identifies the location of the diskette drive.
- *u* is the *unit number*. A unit number is a decimal number that, along with the controller designation, identifies the location of the diskette drive.
- *volume-label* is a one-to-six character name.

For example, if the device name of drive 1 is DUA2, the following command initializes and formats the diskette in drive 1 and labels it TEST.

```
$ INITIALIZE/DENSITY=DOUBLE DUA2 TEST
```


Using Tape Cartridges and Floppy Diskettes

3.2 Floppy Diskettes

3.2.3 Mounting an RX33 Diskette

Note: You do not need to mount any floppy diskettes when you install the VMS operating system. The installation procedure does this automatically.

After you insert a floppy diskette (and initialize it if it is new), you must mount it to make it available to the system. To mount a floppy diskette, enter the MOUNT command in the following format and press RETURN:

```
$ MOUNT DUcu volume-label
```

where:

- *c* is the *controller designation*. A controller designation can be one of the alphabetic letters A through Z. The controller designation, along with the unit number, identifies the location of the diskette drive.
- *u* is the *unit number*. A unit number is a decimal number that, along with the controller designation, identifies the location of the diskette drive.
- *volume-label* is a one-to-six character name.

For example, if the device name of drive 1 is DUA2, the following command mounts the floppy diskette in diskette drive 1 and labels it APR90:

```
$ MOUNT DUA2 APR90
```

If you do not specify the correct volume label when you mount the diskette, the system displays the following message:

```
%MOUNT-F-INCVOVLABEL, incorrect volume label
```

If you do not remember the volume label, enter the MOUNT command in the following format and press RETURN:

```
$ MOUNT/OVERRIDE=IDENTIFICATION DUcu
```

To determine the volume label of the floppy diskette, enter a command in the following format and press RETURN:

```
$ SHOW DEVICE DUcu
```

The system displays the volume label.

3.2.4 Dismounting an RX33 Diskette

Note: You do not need to dismount any floppy diskettes when you install the VMS operating system. The installation procedure does this automatically.

When you finish using a floppy diskette, you should dismount it. To dismount a floppy diskette, enter the DISMOUNT command in the following format and press RETURN:

```
$ DISMOUNT DUcu
```


Using Tape Cartridges and Floppy Diskettes

3.2 Floppy Diskettes

where:

- *c* is the *controller designation*. A controller designation can be one of the alphabetic letters A through Z. The controller designation, along with the unit number, identifies the location of the diskette drive.
- *u* is the *unit number*. A unit number is a decimal number that, along with the controller designation, identifies the location of the diskette drive.

For example, if the device name of drive 1 is DUA2, the following command dismounts the floppy diskette that is mounted in drive 1.

```
$ DISMOUNT DUA2
```

After you have dismounted the floppy diskette, you can remove it from the diskette drive.

3.2.5 Removing an RX33 Diskette

To remove an RX33 floppy diskette from the drive, use the following procedure:

- 1 Make sure the activity light on the diskette drive is off.

CAUTION: Never turn the diskette-drive lever if the activity light glows or blinks; you might damage the diskette drive.

- 2 Turn the diskette-drive lever until it is parallel to the access slot.
- 3 Gently remove the floppy diskette from the drive. Make sure you handle only the edges of the floppy diskette.
- 4 Put the floppy diskette in its paper envelope.

Using Tape Cartridges and Floppy Disks

3.2 Floppy Disks

1. Insert the disk into the floppy disk drive.

2. The system will prompt you to insert a disk. Press the spacebar to continue.

3. The system will prompt you to insert a disk. Press the spacebar to continue.

4. The system will prompt you to insert a disk. Press the spacebar to continue.

5. The system will prompt you to insert a disk. Press the spacebar to continue.

Removing an RK33 Diskette

3.3

1. Remove the diskette from the drive.

2. The system will prompt you to insert a disk. Press the spacebar to continue.

3. The system will prompt you to insert a disk. Press the spacebar to continue.

4. The system will prompt you to insert a disk. Press the spacebar to continue.

5. The system will prompt you to insert a disk. Press the spacebar to continue.

6. The system will prompt you to insert a disk. Press the spacebar to continue.

4 Before Installing VMS

This chapter describes terms and procedures you need to know before you do an installation.

4.1 The Distribution Media and the System Disk

When you install the VMS operating system, you work primarily with the distribution media and the system disk. The *distribution media* are the floppy diskettes or tapes on which the VMS operating system is supplied. The VMS operating system is supplied on the distribution media in a format that the system cannot readily use.

The installation procedure transfers the VMS operating system from the distribution media to your system disk and puts it in a format that the system can use. A *system disk* is the disk that contains (or will contain) the VMS operating system in a usable format.

4.2 Device Names

At different times during the installation, you must tell the system which drive contains the distribution media and which drive contains the system disk. You do this by referring to the diskette or tape cartridge drive that holds the distribution media, and to the fixed disk that you want to be your system disk. You refer to a drive with its *device name*. A device name has the following format:

ddcu

where:

- *dd* is the *device code*. The device code tells what type of device you are using.
- *c* is the *controller designation*. A controller designation can be one of the alphabetic letters A through Z. The controller designation, along with the unit number, identifies the location of the device.
- *u* is the *unit number*. A unit number can be a decimal number in the range of 0 to *n*. The unit number, along with the controller designation, identifies the location of the device.

Note: The only part of the name you can modify is the unit number. The device code is fixed, and the controller designation is created when the hardware is installed.

Section 4.3 lists the device names for the different drives that can be part of the MicroVAX II system.

Before Installing VMS

4.3 MicroVAX Devices

4.3 MicroVAX Devices

Your MicroVAX system may contain one or many fixed disks, removable hard disks, one console port (which can be connected to a video or printing terminal), and a single- or dual-diskette drive or a tape cartridge drive. Options are available for additional terminals (video or printing) and for additional disk or tape drives.

You can use any of the disk drives to hold the system disk. When choosing a system disk, you need to be aware of the capacity of the disk as well as the size of the VMS operating system. Keep in mind that a system disk in a VAXcluster environment needs more space for the operating system than a system disk for a standalone system.

Note: If your MicroVAX system has more than one fixed disk, Digital recommends that you use the drive with device name DUA0 as your system disk; whenever the system starts up, it attempts to boot the system from DUA0 before attempting to boot the system from any other fixed disks.

The system uniquely names each device attached to it. Before you begin the installation procedure, make sure you know the device names for both the drive that will hold the distribution media and the drive that will hold the system disk. Note that the device name of a disk or diskette drive depends on the number of fixed disks.

4.3.1 MicroVAX II System Without RA-series Disks

The following tables list the device names of disks and diskettes attached to a system that does *not* include RA-series disks (RA60, RA81, and RA82). Only MicroVAX II 630QE systems contain RA-series disks.

Device on System without RA Disks	Device Name with One Fixed Disk
Fixed disk RD53 or RD54	DUA0
Diskette	DUA1
Diskette	DUA2
CD ROM drive	DUBu
Magnetic tape	MUA0

Device on System without RA Disks	Device Name with Two Fixed Disks
Fixed disk RD53 or RD54	DUA0
Fixed disk RD53 or RD54	DUA1

Device on System without RA Disks	Device Name with Two Fixed Disks
Diskette	DUA2
Diskette	DUA3
CD ROM drive	DUBu
Magnetic tape	MUA0

4.3.2 MicroVAX II System with RA-series Disks

Some MicroVAX II 630QE systems contain RA-series disks (RA60, RA81, or RA82). If you have a MicroVAX II system with RA-series disks, use the conventions described in the following paragraphs to determine the device names for disk and diskette drives.

Every MicroVAX II 630QE system contains a KDA50 disk controller (for RA60, RA81, or RA82 disks). Some MicroVAX II 630QE systems also contain an RQDX disk controller (for RD53 disks and diskettes). If your configuration does *not* have either diskette drives or RD53 disks, your system does not contain an RQDX disk controller. The device names of disks on a 630QE system depend on whether your system contains an RQDX disk controller.

If your system does *not* contain an RQDX disk controller, then the device names are as follows:

Disk (without RQDX Disk Controller)	Device Name
RA60	DJAu
RA70, RA81, RA82	DUAu
CD ROM drive	DUBu

If your system *does* contain an RQDX disk controller, then the device names are as follows:

Disk (with RQDX Disk Controller)	Device Name
RA60	DJBu
RA70, RA81, RA82	DUBu
RD53	DUAu ¹
diskette	DUAu ²
CD ROM drive	DUCu

¹If n equals the number of RD53 fixed disks, then u ranges from zero to $n-1$.

²The floppy diskette drives are numbered DUAn and DUAn+1.

For example, if your MicroVAX II has two RD53 fixed disks, a diskette drive, one RA60 disk (with a unit number 0), and one RA81 disk (with a unit number 1), then the device names are as follows:

Before Installing VMS

4.3 MicroVAX Devices

Disk	Device Name
First RD53 fixed disk	DUA0
Second RD53 fixed disk	DUA1
RX33 diskette	DUA2
RA60 disk	DJB0
RA81 disk	DUB1

If your MicroVAX II has one RA60 and one RA81 disk, no RD53 disks, and no diskette drives, then the device names are as follows:

Disk	Device Name
RA60 disk	DJA0
RA81 disk	DUA1

There are many possible configurations of MicroVAX II systems with RA disks, and all the possible device names cannot be listed here. Use the information in the preceding paragraphs to determine the device names for the disks or diskette drives in your configuration.

4.3.3 Console Subsystem with a KFQSA Controller

The MicroVAX II supports one KFQSA disk controller. The KFQSA controller acts as an interface between the Digital Storage System Interconnect (DSSI) bus and the Q-bus. With this controller the MicroVAX II can access, through the Q-bus, RF30 and RF71 disk drives that are connected to the DSSI bus. Note the following about RF30 and RF71 disk drives:

- You can connect RF30 and RF71 disk drives to a DSSI bus or through the KFQSA disk controller to the Q-bus (you cannot connect them to either a CI or an HSC).
- You can connect up to two VAX computers to one DSSI bus using the KFQSA disk controller (this is called a multihost configuration).
- If you have two VAX computers connected to one DSSI bus, they both can share the RF30 and RF71 disk drives on that bus provided that the following are true:
 - Each VAX computer uses one KFQSA disk controller.
 - The VAX computers are configured in a local area VAXcluster so that RF30 and RF71 disk drives have the same device names on both VAX computers.
- When you serve RF30 and RF71 disks to other VAX computers in a cluster, you must set the allocation class for each drive and for the computer that you designate as the server to a value between 1 and 255. You should use the MicroVAX Diagnostic Monitor (MDM) to set the allocation class for each RF30 and RF71 drive. For complete information on using the MDM to set the allocation class for these

Before Installing VMS

4.3 MicroVAX Devices

drives, see the hardware guide supplied with your KFQSA disk controller.

You can make RF30 and RF71 disk drives available to VAX computers on the Ethernet. To do this, use CLUSTER_CONFIG to designate one or both (for a multi-host configuration) of the VAX computers on the DSSI bus as a disk server.

There are two device codes for RF30 and RF71 drives that are connected to the KFQSA disk controller. DU is the device code to use when you boot from an RF30 or RF71 drive. DI is the device code to use when you want to perform VMS operations. The device names for RF30 and RF71 drives are as follows:

VMS Device Name	Device Name for Booting
DIA0	DUA0
DIB1	DUB1
DIC2	DUC2

Suppose you have a system disk and you want to make a backup copy on either an RF30 or RF71 disk. If you want to use the backup copy as the system disk, do the following:

- Use the backup copy to boot the VMS operating system.
- In the file SYS\$SYSTEM:MODPARAMS.DAT, set the ALLOCLASS SYSGEN parameter to the same number as the RF30 and RF71 disk drives. Also set the MSCP_SERV_ALL SYSGEN parameter to 1.
- Run AUTOGEN by entering the following command and pressing RETURN:

```
$ @SYS$UPDATE:AUTOGEN GETDATA REBOOT NOFEEDBACK
```

4.3.4 Additional Device Names

The following tables list device names that are the same on all MicroVAX systems.

Device	Device Name
Console	OPA0
Optional terminal	TTA0 or TXA0
Optional terminal	TTA1 or TXA1
Optional terminal	TTA2 or TXA2
Optional terminal	TTA3 or TXA3 ¹

¹There can be more than three terminals attached to your system; additional terminals are named according to this scheme.

Before Installing VMS

4.3 MicroVAX Devices

Device	Device Name
Ethernet controller	XQuu
DMV11 synchronous communication device	XDcu
DRV11-WA synchronous communication device	XAcu
MSCP controller	PUcu
TMSCP controller	PTcu
TK50 tape cartridge drive	MUA0
CD ROM drive	DUcu

The SHOW DEVICES command displays status information on the specified device or, if no device is specified, on all devices. In the following example, the SHOW DEVICES command is entered without specifying a device. The resulting display shows basic information on all devices attached to a system:

```
$ SHOW DEVICES
```

Your system may not contain all of the devices shown, or it may contain additional devices.

Device Name	Device Status	Error Count	Volume Label	Free Blocks	Trans Count	Mnt Cnt
DUA0:	Mounted	0	VMS	84242	32	1
DUA1:	Online	0				
DUA2:	Online	0				

Device Name	Device Status	Error Count	Volume Label	Free Blocks	Trans Count	Mnt Cnt
MUA0:	Online	0				

Device Name	Device Status	Error Count
OPA0:	Online	0
RTA0:	Online	0
RTB0:	Online	0

Device Name	Device Status	Error Count
PUA0:	Online	0
XQA0:	Online	0
XQA1:	Online	0

To display all information on a specified device or all devices, use the /FULL qualifier to the SHOW DEVICES command.

4.4 Preparing the System Disk

To set up the system disk you use during the installation, use the following procedure:

- 1 If your system consists of more than one fixed disk, decide which one you want to be the system disk. Digital recommends that you use the drive with device name DUA0 as the system disk; whenever the system starts up, it attempts to boot the system from DUA0 before attempting to boot the system from any other fixed disk.

Before Installing VMS

4.4 Preparing the System Disk

- 2 If your MicroVAX II has not run operating system software previously, your fixed disk(s) might not be formatted. You *must* format the fixed disk(s) before installing the VMS operating system. For instructions on formatting fixed disks, see the owner's manual for your computer.

CAUTION: Do not format a disk after the installation; if you do, you will erase the disk.

4.5 Information on VAXcluster Environments

If you are installing the VMS operating system in a VAXcluster environment, the installation procedure will ask you for information about your VAXcluster environment. Before proceeding, you must read the *VMS VAXcluster Manual*. If you have a clear understanding of VAXclusters before you do an installation, you are less likely to enter incorrect information during the installation. Entering incorrect information during the installation might force you to repeat the entire procedure.

Following is a list of the VAXcluster information you need to obtain. For a complete explanation of each item, see the *VMS VAXcluster Manual*.

Determine what type of configuration you want: CI-only, local area, or mixed-interconnect. These configuration types are distinguished by the interconnect device that the VAX computers in the cluster use to communicate with one another (CI, Ethernet, or both).

Note: The VAXstation II, II/GPX and MicroVAX II family of computers cannot be part of a CI-only VAXcluster.

You need to know the *DECnet node name* and *node address* for the VAX computer on which you are installing the VMS operating system. The network or system manager determines the DECnet node name and node address for each VAX computer on the network. See your system or network manager for this information.

During the installation procedure you will be asked for the ALLOCLASS value of the VAX computer you are installing VMS on. For example:

Enter a value for ALICE's ALLOCLASS parameter:

Enter the appropriate allocation class value for the VAX computer that you are installing the VMS operating system on. Refer to the *VMS VAXcluster Manual* for the rules on specifying allocation class values. Note that in a mixed-interconnect VAXcluster environment the allocation class value cannot be zero. It has to be a value between 1 and 255. This is also true for any VAX computer that is connected to a dual-path disk.

When you enter the allocation class value, the installation procedure uses it to automatically set the value of ALLOCLASS, a SYSGEN parameter.

If you are going to set up either a local area or a mixed-interconnect cluster, determine the *cluster group number* and the *cluster password*. Use the following rules to determine the cluster group number and password:

- Cluster group number—A number in the range from 1 to 4095 or 61440 to 65535.

Before Installing VMS

4.5 Information on VAXcluster Environments

- Cluster password—Must be from 1 to 31 alphanumeric characters in length and may include dollar signs (\$) and underscores (_).

5 Installing VMS

Make sure you know the difference between an installation and an upgrade by reading Chapter 1. If you are going to install the VMS operating system, follow the installation procedure in the most recent version of *VMS Upgrade and Installation Procedures*. Refer to this chapter for installation information specific to the MicroVAX II. It includes the following information:

- Turning on the system
- Preparing the system disk
- Booting standalone BACKUP
- Booting the new system disk
- Information on the mandatory update

Before you begin the installation, read Chapter 4. If you are installing the VMS operating system on a VAX computer that is part of a VAXcluster environment, read the *VMS VAXcluster Manual*.

Note: The screen displays and examples depict the installation of VMS Version 5.2. Your screen displays reflect the version that you are installing.

5.1 Turning On the System

The following steps describe how to turn on the system and set the switches on the CPU panel.

- 1 Turn on the console terminal. If you do not know how to determine if the terminal is online, see the owner's manual for your terminal.

During the software installation, enter all commands from the console terminal.

Make sure that the baud rate (transmit and receive speed) of the console terminal and the system is 9600 baud. To check the baud rate on the terminal, see Section 2.8.1. To check the baud rate setting for all MicroVAX systems except the BA200 series model, see Section 2.5.1. The baud rate for all BA200 series models is preset to 9600 baud.

Your console terminal must be set to 8 bits, no parity transmit, and no parity receive. This is the default for most terminals, except the LA120. For instructions on checking these settings, see the owner's manual provided with your LA120 terminal.

- 2 For all systems except the BA200 series model, make sure that the HALT, RESTART, WRITE-PROTECT, and READY buttons on the processor control panel are popped out. (If a button is pressed in, press

Installing VMS

5.1 Turning On the System

it in again to make it pop out.) The BA200 series model does not have the HALT, RESTART, WRITE-PROTECT, and READY buttons.

- 3 If you have a MicroVAX II computer, set the Halt Enable/Disable switch to ENABLE.
- 4 Turn on the computer. Push the power switch to the 1 (ON) position. The switch on all models except the MicroVAX II 630QB glows orange. The fan inside the processor box goes on.

The first time a MicroVAX II computer is turned on, the system should display the language-mode selection menu. (If you have selected a language already, the computer proceeds directly to the diagnostic tests.)

If you are prompted to select a language from the list of languages that appears on your terminal screen, select the language you want to use by entering the number associated with that language and pressing RETURN. To save the language that you have selected, turn the power-up mode switch on the CPU panel counterclockwise to the → (arrow) position.

After you select the language and set the power-up mode switch on a MicroVAX II system, the system performs diagnostic tests. During these self-tests, the system begins a countdown sequence, starting with the number 7. When it reaches 3, the console-mode prompt (>>>) should appear on your terminal screen.

If the computer does not turn on properly—for example, if you receive the message MICROVERIFY FAILED—check the processor control panel before beginning any troubleshooting procedures. The problem may be something simple such as the HALT button being pushed in.

When the system tests complete on a MicroVAX II computer, your computer should be running with the console terminal in console mode; that is, the console-mode prompt (>>>) should appear on the terminal screen. If you do not receive the console-mode prompt (>>>), press either the HALT button or the F5 (BREAK) key twice.

- 5 Check the processor control panel lights again. Only the following lights should be glowing: the READY button light, the DC OK light, and the power switch. The power switch on a MicroVAX II model 630QB does not contain a light. If one of these buttons is not glowing, press it.
- 6 Make sure that the Halt Enable/Disable switch is set to ENABLE.

At this point, your system should be running with the console terminal in console mode; that is, the console-mode prompt (>>>) should appear on the screen.

5.2 Booting Standalone BACKUP

This section describes the steps for booting standalone BACKUP. Standalone BACKUP lets you transfer the VMS *required* save set from the distribution kit to your system disk. The method you use to boot standalone BACKUP depends on the type of distribution kit you have.

- Magnetic tape or tape cartridge kit—Follow the instructions in Section 5.2.1
- Floppy diskette kit—Follow the instructions in Section 5.2.2
- Compact disc kit—Follow the instructions in Section 5.2.3

5.2.1 Magnetic Tape or Tape Cartridge Kit

When you have a magnetic tape or tape cartridge distribution kit, you boot standalone BACKUP from a tape cartridge. The tape cartridges are labeled similar to the following:

Paper Label ¹	Volume Label ²
Magnetic Tape Kit	
VMS V5.2 BIN TK50 1/2 BINARY	SYSTEM
Tape Cartridge Kit	
VMS V5.2 BIN TK50 2/2 S/A BKUP & DECWINDOWS	DECW52

¹A paper label is a label affixed to a tape cartridge or magnetic tape.

²A volume label is the name the VMS operating system uses to refer to a tape cartridge or magnetic tape. During the installation, the procedure displays the volume label, not the paper label, in messages.

Booting standalone BACKUP takes approximately 20 minutes.

- 1 Insert the tape cartridge containing standalone BACKUP in the tape cartridge drive.
- 2 At the console-mode prompt, enter the following command and press RETURN:

```
>>> B MUAO
```

Note: Ignore any error messages about missing drivers that might resemble the following:

```
%SYSGEN-I-OPENIN, error opening SYS$SYSROOT:[SYSEXE]VADriver.EXE; as input
%SYSGEN-E-FNF, file not found
```

These messages might be displayed during the installation.

- 3 A few minutes later standalone BACKUP displays the following message:

```
VAX/VMS Version V5.2 Major version id = 01 Minor version id = 00
```


Installing VMS

5.2 Booting Standalone BACKUP

- 4 A few minutes later the procedure asks for the date and time. Enter the date and time using the 24-hour clock format and press RETURN. For example:

```
PLEASE ENTER DATE AND TIME (DD-MMM-YYYY HH:MM) 19-APR-1990 13:00
```

- 5 The procedure displays a list of local devices on your system and, if you have them, HSC and MSCP-served devices. For example:

```
Available device MUA0:      device type TK50
```

Check the list of devices. If the list is incomplete, make sure that all the drives are connected properly to the system. See your hardware manuals for details.

- 6 When standalone BACKUP finishes booting, the procedure displays an identification message followed by the dollar-sign prompt (\$):

```
%BACKUP-I-IDENT, Stand-alone BACKUP V5.2; the date is 19-APR-1990 13:00
$
```

5.2.2 Floppy Diskette Kit

When you have a floppy diskette kit, you boot standalone BACKUP from a set of RX33 floppy diskettes. They are labeled similar to the following:

Paper Label ¹	Volume Label ²
VMS V5.2 RX33 S/A BKUP 1/3	SYSTEM_1
VMS V5.2 RX33 S/A BKUP 2/3	SYSTEM_2
VMS V5.2 RX33 S/A BKUP 3/3	BACKUP

¹A paper label is a label affixed to a diskette.

²A volume label is the name the VMS operating system uses to refer to a diskette. During the installation, the procedure displays the volume label, not the paper label, in messages.

The number of floppy diskettes may vary, depending upon the version of the VMS operating system that you are installing.

The procedure asks you to place the floppy diskettes containing standalone BACKUP, successively, in the diskette drive.

- 1 Insert the floppy diskette labeled VMS V5.2 RX33 S/A BKUP 1/3 in the diskette drive.
- 2 To boot standalone BACKUP, enter the following command and press RETURN:

```
>>> B DUA2
```

Note: Ignore any error messages about missing drivers that might resemble the following:

```
%SYSGEN-I-OPENIN, error opening SYS$SYSROOT:[SYSEXE]VADRIVER.EXE; as input
%SYSGEN-E-FNF, file not found
```


Installing VMS

5.2 Booting Standalone BACKUP

These messages might be displayed during the installation.

- 3 A few minutes later standalone BACKUP displays the following message:

VAX/VMS Version V5.2 Major version id = 01 Minor version id = 00

- 4 A few minutes later the procedure asks for the date and time. Enter the date and time using the 24-hour clock format and press RETURN. For example:

PLEASE ENTER DATE AND TIME (DD-MMM-YYYY HH:MM) 19-APR-1990 13:00

- 5 The procedure displays the following message:

Configuring devices . . .

Please remove the volume "SYSTEM_1" from the console device.

Insert the next standalone system volume and enter "YES" when ready:

Remove the floppy diskette labeled VMS V5.2 RX33 S/A BKUP 1/3 from the diskette drive and insert the floppy diskette labeled VMS V5.2 RX33 S/A BKUP 2/3 in the drive. When you are ready to continue, type Y (for YES) and press RETURN.

- 6 The procedure displays the following message:

Resuming load operation on volume "SYSTEM_2", please stand by . . .

- 7 The procedure displays a list of the local devices on your system and, if you have them, HSC and MSCP-served devices. For example:

Available device MUA0: device type TK50

.

.

.

Check the list of devices. If the list is incomplete, make sure that all the drives are connected properly to the system. See your hardware manuals for details.

- 8 The procedure displays the following message:

Please remove the volume "SYSTEM_2" from the console device.

Insert the standalone application volume and enter "YES" when ready:

Remove the floppy diskette labeled VMS V5.2 RX33 S/A BKUP 2/3 from the diskette drive and insert the floppy diskette labeled VMS V5.2 RX33 S/A BKUP 3/3 in the drive. When you are ready to continue, type Y (for YES) and press RETURN.

- 9 The procedure displays the following message:

Resuming load operation on volume "BACKUP", please stand by . . .

- 10 When standalone BACKUP finishes booting, it displays an identification message followed by the dollar-sign prompt (\$):

%BACKUP-I-IDENT, Stand-alone BACKUP V5.2; the date is 19-APR-1990 13:00
\$

- 11 Remove the floppy diskette labeled VMS V5.2 RX33 S/A BKUP 3/3 from the diskette drive.

Installing VMS

5.2 Booting Standalone BACKUP

5.2.3 Compact Disc Kit

When you have a compact disc kit, you boot standalone BACKUP from a compact disc. The procedure takes approximately three minutes.

- 1 To boot standalone BACKUP, enter the BOOT command in the following format and press RETURN:

```
>>> B DUcu
```

Substitute the controller designation of the drive holding the CD ROM disc for *c*. Substitute the unit number of the drive holding the CD ROM disc for *u*. Section 4.3 contains a list of device names for all MicroVAX II devices.

Note: Ignore any error messages about missing drivers that might resemble the following:

```
%SYSGEN-I-OPENIN, error opening SYS$SYSROOT:[SYSEXE]VADriver.EXE; as input  
%SYSGEN-E-FNF, file not found
```

These messages might be displayed during the installation.

- 2 A few minutes later standalone BACKUP displays the following message:

```
VAX/VMS Version V5.2 Major version id = 01 Minor version id = 00
```

- 3 A few minutes later the procedure asks for the date and time. Enter the date and time using the 24-hour clock format and press RETURN. For example:

```
PLEASE ENTER DATE AND TIME (DD-MMM-YYYY HH:MM) 19-APR-1990 13:00
```

- 4 The procedure displays a list of the local devices on your system and, if you have them, HSC and MSCP-served devices. For example:

```
Available device MUA0:    device type TK50
```

```
 .  
 .  
 .
```

Check the list of devices. If the list is incomplete, make sure that all the drives are connected properly to the system. See your hardware manuals for details.

- 5 When standalone BACKUP finishes booting, the procedure displays an identification message followed by the dollar-sign prompt (\$):

```
%BACKUP-I-IDENT, Stand-alone BACKUP V5.0; the date is 19-APR-1990 13:00  
$
```

5.3 Booting the New System Disk

As a result of the BACKUP command you type to start an installation, the *required* save set of the VMS operating system is transferred to the system disk. You know the *required* save set is on the new system disk when you see the following display:

```
%BACKUP-I-STARTVERIFY, starting verification pass
```


Installing VMS

5.3 Booting the New System Disk

This message indicates that the *required* save set has been transferred to the system disk and the files are being checked for errors. Approximately 25 minutes later, the procedure displays the following message:

```
%BACKUP-I-PROCDONE, operation completed. Processing finished at 19-APR-1990 13:00
If you do not want to perform another standalone BACKUP operation,
use the console to halt the system.
```

```
If you do want to perform another standalone BACKUP operation,
ensure the standalone application volume is online and ready.
Enter "YES" to continue:
```

To continue the installation, stop the system and boot the system disk as follows:

- 1 If your system has a HALT button, press it twice. If your system does not have a HALT button, press the F5 (BREAK) key.
- 2 To boot the system disk, enter the BOOT command in the following format and press RETURN:

```
>>> B ddcu
```

Substitute the device name of the system disk for *ddcu*. Section 4.3 contains a list of device names for all MicroVAX devices.

For example, suppose the system disk is the only RD54 fixed disk in your MicroVAX system. Enter the following command and press RETURN:

```
>>> B DUA0
```

Suppose the system disk is on an RA60 disk drive (without an RQDX disk controller) and the unit number is 1. Enter the following command and press RETURN:

```
>>> B DJA1
```

Booting the system takes approximately four minutes. When the boot is complete, the procedure displays a message and asks for the date and time.

5.4 Information on the Mandatory Update

If you have either a tape cartridge or magnetic tape kit, the mandatory update is supplied on a tape cartridge. If you have a floppy diskette kit, the mandatory update is supplied on an RX33 floppy diskette. If you have a compact disc kit, the mandatory update is supplied on the compact disc. Follow the instructions displayed by the installation procedure.

Installing VMS 6.3 Booting the New System Disk

The current configuration of the system disk is as follows: (see the VMS Reference Manual for details on the disk format and the boot process.)

The system disk is divided into two main areas: the boot area and the user area. The boot area contains the boot loader and the system files. The user area contains the user files and the system files.

To boot the system, insert the system disk into the drive and power on the system.

1. If you are using a VMS 6.3 system, the boot loader will prompt you for the system disk.

2. If you are using a VMS 6.3 system, the boot loader will prompt you for the system disk.

3. If you are using a VMS 6.3 system, the boot loader will prompt you for the system disk.

4. If you are using a VMS 6.3 system, the boot loader will prompt you for the system disk.

5. If you are using a VMS 6.3 system, the boot loader will prompt you for the system disk.

6. If you are using a VMS 6.3 system, the boot loader will prompt you for the system disk.

7. If you are using a VMS 6.3 system, the boot loader will prompt you for the system disk.

8. If you are using a VMS 6.3 system, the boot loader will prompt you for the system disk.

9. If you are using a VMS 6.3 system, the boot loader will prompt you for the system disk.

10. If you are using a VMS 6.3 system, the boot loader will prompt you for the system disk.

Information on the Mandatory Update

2.1

The mandatory update is a critical update to the VMS 6.3 system. It contains changes to the system files and the user files. It is recommended that you install the mandatory update as soon as possible.

Part II

Part II describes frequently performed system operations such as system startup, shutdown, and backup.

Part II

Part II: The second half of the book, which is devoted to the study of the various forms of the English language, including the history of the language, the dialects, and the literature.

6 Startup and Shutdown Procedures

This chapter contains information on the following:

- Overview of booting the system
- Booting from [SYSF]
- Ways to boot the system
- Shutting down the system

6.1 Overview of Booting

Booting is the process of loading system software into the processor's memory. The MicroVAX II uses an internal memory device to boot the VMS operating system from the system disk into memory.

The boot process consists of the following steps:

- 1 You enter the BOOT command. The boot procedure deposits information in the general purpose registers.
- 2 VMB, the primary boot program, is loaded from read-only memory (ROM) into memory. VMB is a program that allows access to the system disk. VMB locates SYS\$SYSTEM:SYSBOOT.EXE on the system disk and loads it into memory.
- 3 SYSBOOT.EXE loads the SYSGEN parameters stored in SYS\$SYSTEM:VAXVMSSYS.PAR and checks the conversational boot flag. If the flag is set, the procedure stops and displays the SYSBOOT> prompt. If the flag is not set, SYSBOOT.EXE loads the VMS executive into memory and transfers control to the VMS executive.
- 4 When the VMS executive finishes, it executes the SWAPPER process.
- 5 The SWAPPER creates the SYSINIT process.
- 6 SYSINIT creates the STARTUP process.
- 7 STARTUP executes SYS\$SYSTEM:STARTUP.COM (unless you indicated another file at the SYSBOOT> prompt) and SYSTARTUP_V5.COM. The current values of SYSGEN parameters are written back to VAXVMSSYS.PAR.
- 8 The boot process finishes, and you can log in to the VMS operating system.

Startup and Shutdown Procedures

6.2 Sniffer Boot

6.2 Sniffer Boot

A sniffer boot allows you to boot the system without specifying a device name. When the system boots automatically, it always does a sniffer boot.

To perform a sniffer boot, do the following:

- 1 If the VMS operating system is not running, go to step 2.

If the VMS operating system is running, log in to the SYSTEM account. Enter the following command and press RETURN:

```
$ @SYS$SYSTEM:SHUTDOWN
```

Answer the questions. When the procedure asks if an automatic system reboot should be performed, press RETURN for NO. When the procedure is finished, it displays the following message:

```
SYSTEM SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM
```

- 2 Stop the system. If your system has a HALT button, press it twice. If your system does not have a HALT button, press the F5 (BREAK) key.
- 3 Enter the following command and press RETURN:

```
>>> B
```

The system successively tries to boot devices until it finds one from which it can boot. The system searches in the following order for a device from which it can boot:

- Fixed disks
- TK50 tape cartridge drives
- The network

If the system does not find any devices from which to boot, it continues to alternate between trying to boot from tape and from the network indefinitely.

6.3 Automatic Boot

The VMS operating system can boot automatically from the system disk. When the system boots automatically, it always does a sniffer boot. For more information on the sniffer boot, see Section 6.2.

You can cause the system to boot automatically whether the system is turned on or turned off.

- If the system is turned off, do the following:

- 1 Set the Halt Enable/Disable switch to DISABLE by pushing the switch toward the circle with the dot outside it.
- 2 Turn on the system.
- 3 The procedure displays several console-mode and VMS messages and it might ask you for the date and time.

The automatic boot completes without asking you for the date and time.

Startup and Shutdown Procedures

6.3 Automatic Boot

- 4 The final message should look like the following:

```
SYSTEM      Job terminated at 19-APR-1990 13:00:00.00
```

- If the system is turned on, set the Halt Enable/Disable switch to **DISABLE** by pushing the switch toward the circle with the dot outside it. The operating system boots automatically under the following conditions:
 - When the system turns on after a power failure
 - After you shut down the CPU using the `SYS$SYSTEM:SHUTDOWN.COM` command procedure (if you entered Y to specify automatic reboot)
 - After the CPU shuts down because of a bugcheck

6.4 Manual Boot

To boot the VMS operating system manually, use the following procedure:

- 1 Make sure that your computer is set up properly and turned on. Make sure the processor control panel (all models except the BA200 series) is set for normal operations. Only the READY button, the DC OK light, and the power switch should glow. On the BA200 series model, only the DC OK light and the power switch should glow.
- 2 Make sure that your console terminal is properly set up and turned on.
- 3 If the VMS operating system is not running, go to step 4.

If the VMS operating system is running, log in to the **SYSTEM** account. Enter the following command and press RETURN:

```
$ @SYS$SYSTEM:SHUTDOWN
```

Answer the questions. When the procedure asks if an automatic system reboot should be performed, press RETURN for NO. When the procedure is finished, it displays the following message:

```
SYSTEM SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM
```

- 4 Stop the system. If your system has a **HALT** button, press it twice. If your system does not have a **HALT** button, press the F5 (BREAK) key.
- 5 Enter the **BOOT** command in the following format and press RETURN:

```
>>> B ddcu
```

Substitute the device name of the system disk for `ddcu`. Section 4.3 contains a list of device names for all MicroVAX II devices.

For example, to boot from a floppy diskette drive with a unit number of one, use the following command:

```
>>> B DUAL
```

- 6 The procedure might ask for the date and time. Enter the date and time using the 24-hour clock format and press RETURN. For example:

```
VAX/VMS Version BI50 Major version id = 01 Minor version id = 00  
PLEASE ENTER DATE AND TIME (DD-MMM-YYYY HH:MM) 19-APR-1990 13:00
```


Startup and Shutdown Procedures

6.4 Manual Boot

- 7 After the system boots, it displays the following message:

```
VAX/VMS Version V5.2 19-APR-1990 13:00  
The VAX/VMS system is now executing the system startup procedure.  
The VAX/VMS system is now executing the site-specific startup commands.  
%SET-I-INTSET, login interactive limit=64, current interactive value = 0  
19-APR-1990 13:00:00.00  
SYSTEM          job terminated at 19-APR-1990 13:00:00.00
```

6.5 Conversational Boot

A conversational boot is most commonly used in research and development environments and during software upgrades. Perform a conversational boot when you want to stop the boot process before it completes. The boot process stops after it loads SYS\$SYSTEM:SYSBOOT.EXE and displays the SYSBOOT> prompt. At the SYSBOOT> prompt, you can enter certain SYSGEN commands to do the following:

- Look at system parameter values
- Change system parameter values
- Specify another parameter file
- Specify another system startup command procedure
- Select the default system parameter file if you modified system parameters to values that render the system unbootable
- Specify a minimum startup

There are several ways to perform a conversational boot. The following is the most direct:

- 1 If the VMS operating system is not running, go to step 2.

If the VMS operating system is running, log in to the SYSTEM account. Enter the following command and press RETURN:

```
$ @SYS$SYSTEM:SHUTDOWN
```

Answer the questions. When the procedure asks if an automatic system reboot should be performed, press RETURN for NO. When the CPU is stopped, the procedure displays the following message:

```
SYSTEM SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM
```

- 2 Stop the system. If your system has a HALT button, press it twice. If your system does not have a HALT button, press the F5 (BREAK) key.
- 3 To begin the conversational boot, enter the BOOT command in the following format and press RETURN:

```
>>> B/1 [ddcu]
```

If you do not specify a device name, the system performs a sniffer boot when you finish using the SYSGEN commands.

- 4 At the SYSBOOT> prompt, you can enter any of the SYSGEN commands listed in Table 6-1. For more information about these SYSGEN commands, see the *VMS System Generation Utility Manual*.

Startup and Shutdown Procedures

6.5 Conversational Boot

- 5 When you finish using the SYSGEN commands, enter the CONTINUE command to complete the boot process.

Table 6-1 SYSGEN Commands Used in SYSBOOT

Command	Description
CONTINUE	Resumes the boot process.
DISABLE CHECKS	Inhibits checking of parameter values specified with the SET command.
ENABLE CHECKS	Permits checking of parameter values specified with the SET command.
HELP	Displays a summary of the SYSBOOT commands on the terminal screen.
SET parameter-name	Establishes the name of a system parameter.
SET/STARTUP	Sets the name of the system startup command procedure.
SHOW [parameter-name]	Displays active, current, default, maximum, and minimum values for specific parameters. Use qualifiers to display characteristics of parameters grouped by categories.
USE [file-spec]	Specifies a parameter file to be used as a source of values (you must enter the entire file specification, including device and directory; you cannot specify a logical name).

The following examples illustrate some operations you can perform during a conversational boot.

You can enter the following commands to set a new value for the SYSGEN parameter WSMAX to 512 and to complete the boot process.

```
SYSBOOT> SET WSMAX 512
SYSBOOT> CONTINUE
```

When the VMS operating system displays the following message, the new SYSGEN parameter value becomes active.

```
SYSTEM job terminated at 19-APR-1990 15:00:00.00
```

If you modified the system parameters to values that render the system unbootable, enter the following commands to boot using default values:

```
SYSBOOT> USE DEFAULT
SYSBOOT> CONTINUE
```

You also can use a conversational boot to specify a minimum startup. For example, if you want to boot the system and avoid autoconfiguring all your peripheral devices, enter the following command and press RETURN:

```
SYSBOOT> SET STARTUP_P1 "MIN"
```

The value of STARTUP_P1 is saved and affects future boot operations. After the operating system boots, you can log in to the SYSTEM account and run SYSGEN to reset STARTUP_P1. For example, enter the following commands to reset STARTUP_P1 to its default value (null):

Startup and Shutdown Procedures

6.5 Conversational Boot

```
$ RUN SYS$SYSTEM:SYSGEN
SYSGEN> USE CURRENT
SYSGEN> SET STARTUP_P1 ""
SYSGEN> WRITE CURRENT
SYSGEN> EXIT
$
```

6.6 Booting with XDELTA

XDELTA is a debugging tool that system programmers use. To use XDELTA, you need to boot the system in a special way. For information on booting with XDELTA, see the *VMS Delta/XDelta Utility Manual*.

6.7 Booting from [SYSF] During an Upgrade

In the future you may want to upgrade to the most recent version of the VMS operating system. During the upgrade procedure you must boot from the [SYSF] root directory. To boot from [SYSF], enter the BOOT command in the following format and press RETURN:

```
>>> B/F0000000 ddcu
```

Substitute the device name of the system disk for *ddcu*. Section 4.3 contains a list of device names for all MicroVAX II devices.

For example, to boot from root directory [SYSF] on an RD53 fixed disk, enter the following command and press RETURN:

```
>>> B/F0000000 DUA0
```

6.8 Booting from a Different Directory on the System Disk

The VMS operating system is installed on the system disk in a root directory named [SYS0]. If you have enough room on the system disk, you can use VMSKITBLD, described in the *Guide to Setting Up a VMS System*, to add a copy of the VMS operating system to another root directory on the system disk. To boot from a directory other than [SYS0], enter the BOOT command in the following format and press RETURN:

```
>>> B/n0000000 ddcu
```

Substitute the name of the other root directory on the system disk for *n* and the device name of the system disk for *ddcu*. Section 4.3 contains a list of device names for all MicroVAX II devices.

For example, to boot from root directory [SYS1] on an RD54 fixed disk, enter the following command and press RETURN:

```
>>> B/10000000 DUA0
```


Startup and Shutdown Procedures

6.9 If the System Does Not Boot

6.9 If the System Does Not Boot

If the system does not boot because a hardware problem occurs, a question mark (?) usually precedes the error message displayed on the console terminal. Examples of hardware problems are a read error on a disk drive or a machine check error. If you suspect a hardware problem, do the following:

- 1 Consult the hardware manual for your VAX computer
- 2 Contact Digital Field Service

When the operating system is loaded into memory, the system displays the following message:

```
SYSTEM      job terminated at 19-APR-1990 15:00:00.00
```

If the system does not display this message, a software problem has probably occurred. Do the following:

- 1 Turn off the system. Turn it on again and try to boot.
- 2 Do a conversational boot using the default SYSGEN parameters described in Section 6.5. If the system boots, run AUTOGEN. For more information on AUTOGEN, see the *Guide to Setting Up a VMS System*.

6.10 Shutting Down the System

Before you shut down the operating system, decide whether you want it to reboot automatically or whether you want to enter console-mode commands after the shutdown completes.

If you want the operating system to reboot automatically, set the Halt Enable/Disable switch on a MicroVAX II to DISABLE by pushing the switch toward the circle with the dot outside it. If you want to enter console-mode commands after the shutdown, set the Halt Enable/Disable switch on a MicroVAX II to ENABLE by pushing the switch toward the circle with the dot inside it.

6.10.1 Types of Shutdowns

You can perform the following three types of shutdown operations:

- 1 **An orderly shutdown with SYSS\$SYSTEM:SHUTDOWN.COM.** This procedure shuts down the system while performing maintenance functions such as disabling future logins, stopping the batch and printer queues, dismounting volumes, and stopping user processes. To use the SHUTDOWN command procedure, log in to the SYSTEM account, enter the following command, and press RETURN:

```
$ @SYSS$SYSTEM:SHUTDOWN
```

To stop the system after the procedure completes, press the HALT button twice. If your system does not have a HALT button, press the F5 (BREAK) key.

Startup and Shutdown Procedures

6.10 Shutting Down the System

For more information about the SHUTDOWN command procedure, see the *Guide to Setting Up a VMS System*.

- 2 An emergency shutdown with OPCCRASH.EXE.** If you cannot perform an orderly shutdown with SHUTDOWN.COM, run the OPCCRASH emergency shutdown program. To run the OPCCRASH program, log in to the SYSTEM account, enter the following command, and press RETURN:

```
$ RUN SYS$SYSTEM:OPCCRASH
```

To stop the system after the procedure completes, press the HALT button twice. If your system does not have a HALT button, press the F5 (BREAK) key.

For more information about the OPCCRASH program, see the *Guide to Setting Up a VMS System*.

- 3 An emergency shutdown with CRASH commands.** Use these emergency shutdown commands if OPCCRASH fails. To force a MicroVAX II to fail, see Section 6.10.2.

6.10.2 Emergency Shutdown with CRASH Commands

Note: Use CRASH commands only if the system is hung and you cannot log in to the SYSTEM account to use SHUTDOWN or OPCCRASH.

CRASH commands cause the system to fail, resulting in immediate shutdown. CRASH commands display a fatal bugcheck message as well as additional messages and information. The procedure examines the program counter (PC), the processor status longword (PSL), and the stack pointers. It then deposits values in the PC and PSL to cause an exception condition that sends the contents of memory to the dump file on the system disk. Later you can read the dump file to determine why the system did not respond.

To force your MicroVAX II to fail, do the following:

- 1 Set the Halt Enable/Disable switch to ENABLE.
- 2 Stop the system. If your system has a HALT button, press it twice. If your system does not have a HALT button, press the F5 (BREAK) key.
- 3 Enter the following commands and press RETURN after each one:

```
>>> E PSL
>>> E/I 0
>>> E +
>>> E +
>>> E +
>>> E +
>>> D PC FFFFFFFF
>>> D PSL 041F0000
>>> C
```

- 4 CRASH commands stop the system, display the contents of the program counter, and display the console-mode prompt (>>>). If you want to read the contents of the dump file later to determine why

Startup and Shutdown Procedures

6.10 Shutting Down the System

the system did not respond, write down the values of the PC and the PSL.

The system reboots. If the system does not reboot automatically, reboot it manually.

- 5 After the system reboots, you can examine the dump file. To examine the dump file, log in to the SYSTEM account. Enter the following commands and press RETURN after each one:

```
$ ANALYZE/CRASH SYS$SYSTEM:SYSDUMP.DMP  
SDA> SHOW CRASH
```

For more information about the System Dump Analyzer (SDA), see the *VMS System Dump Analyzer Utility Manual*.

6.11 If the System Fails

Your system can fail in the following ways:

- Bugcheck—The system displays a bugcheck message on the console terminal and shuts itself down. This happens because the system encountered a problem that made further operation impossible. Boot the system manually as explained in Section 6.4 or let it reboot automatically as explained in Section 6.3.
- Hang—The system stops responding to your commands. The problem could be a failure in system software or a hardware component or a power failure.
- Erratic behavior—The system does not respond according to specifications. The problem could be a failure in system software or a hardware component.

To see if the failure is a system problem and not something you have done, try the following:

- Make sure that you did not press the F1 key (the NO SCROLL key on a VT100 series terminal) accidentally.
- Press CTRL/T to check the status of your process. A status line should appear, indicating the name of the program that is executing and other information. If the status line does not appear, the system is probably hung. If the status line does appear, the program you are executing may be hung. (If you have disabled CTRL/T by entering the command SET NOCONTROL=T or have set the terminal to nobroadcast mode by entering the command SET TERMINAL/NOBROADCAST, this procedure does not work.)
- Make sure that the cable connecting the terminal to the processor is secure.

Usually you can force an exit from a hung program by pressing CTRL/Y. When you press CTRL/Y, any work performed by the program and not saved on disk is lost.

Startup and Shutdown Procedures

6.11 If the System Fails

If the system is hung, you must reboot without a normal shutdown. If your system has a HALT button, press it twice. If your system does not have a HALT button, press the F5 (BREAK) key. The system displays the console-mode prompt (`>>>`). Boot the system as described in Section 6.4.

If you have a problem with the system that Digital has not warned you about, note in detail the sequence of events that caused the problem and notify Digital Field Service.

7 Backup Procedures

This chapter describes the following procedures:

- Installing and booting standalone BACKUP on the system disk
- Installing and booting standalone BACKUP on an RX33 floppy diskette
- Installing and booting standalone BACKUP on a TK50 tape cartridge
- Backing up and restoring the system disk

7.1 Overview of Standalone BACKUP

The Backup Utility lets you create and restore backup copies of files, directories, and user disks. Because the Backup Utility copies only what is on the disk and ignores sections of any open files contained in memory, you should use it to back up user disks, not the system disk. If you use the Backup Utility to back up the system disk, the portions of the files that were in memory and data about files not yet written back to the disk (cache) will not be recorded on the resulting backup copy.

Use standalone BACKUP to make a complete backup of the system disk. Standalone BACKUP is a version of the Backup Utility that runs without the support of the entire VMS operating system. Before you use standalone BACKUP, you must shut down the VMS operating system. The shutdown procedure sends the contents of the caches back to the disk and closes any open files. By shutting down the system and using standalone BACKUP, you can make an exact copy of the system disk.

You can keep standalone BACKUP on the system disk, an RX33 floppy diskette, a TK50 tape cartridge, or any other media that the system supports. Digital recommends that you keep standalone BACKUP on the system disk and on a floppy diskette or a tape cartridge.

Usually you boot standalone BACKUP from the system disk because it saves time. You should, however, keep a copy of standalone BACKUP on a floppy diskette or on a tape cartridge in case the system disk becomes damaged. If you have a floppy diskette or tape cartridge distribution kit, you received standalone BACKUP on a floppy diskette or a tape cartridge.

7.1.1 Installing Standalone BACKUP on the System Disk

You can install standalone BACKUP in any available root directory on the system disk from [SYS1] to [SYSE]. However, Digital has established [SYSE] as the standard directory for standalone BACKUP.

To install standalone BACKUP in [SYSE] on the system disk, use the following procedure:

- 1 Log in to the SYSTEM account.

Backup Procedures

7.1 Overview of Standalone BACKUP

- 2 Enter the following command and press RETURN:

```
$ @SYS$UPDATE:STABACKIT SYS$SYSDEVICE:
```

The procedure places the files in the directories [SYSE.SYSEXE] and [SYSE.SYS\$LDR] on the system disk. It lists the files as they are copied. When the procedure finishes, it displays the following message:

The kit is complete.

- 3 To boot standalone BACKUP from the system disk, go to Section 7.1.2.

7.1.2 Booting Standalone BACKUP from the System Disk

To boot standalone BACKUP from the system disk, use the following procedure:

- 1 Set the Halt Enable/Disable switch on the MicroVAX II to ENABLE.

- 2 If the VMS operating system is not running, go to step 3.

If the VMS operating system is running, log in to the SYSTEM account. Enter the following command and press RETURN:

```
$ @SYS$SYSTEM:SHUTDOWN
```

Answer the questions. When the procedure asks if an automatic system reboot should be performed, press RETURN for NO. When the procedure is finished, it displays the following message:

```
SYSTEM SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM
```

- 3 Stop the system. If your system has a HALT button, press it twice. If your system does not have a HALT button, press the F5 (BREAK) key.
- 4 Enter the BOOT command in the following format and press RETURN:

```
>>> B/E0000000 ddcu
```

Substitute the device name of the system disk for *ddcu*. Section 4.3 contains a list of device names for all MicroVAX devices.

- 5 A few minutes later the procedure asks for the date and time. Enter the date and time using the 24-hour clock format and press RETURN. For example:

```
PLEASE ENTER DATE AND TIME (DD-MMM-YYYY HH:MM) 19-APR-1990 13:00
```

- 6 The procedure displays a list of the local devices on your system and, if you have them, HSC- and MSCP-served devices. For example:

```
Available device MUA0:      device type TK50
```

Check the list of devices. If the list is incomplete, make sure that all the drives are connected properly to the system. See your hardware manuals for details.

Backup Procedures

7.1 Overview of Standalone BACKUP

- 7 When standalone BACKUP finishes booting, it displays an identification message followed by the dollar-sign prompt (\$):

```
%BACKUP-I-IDENT, stand-alone BACKUP V5.2; the date is 19-APR-1990 13:00:00.00
$
```

To back up the system disk to floppy diskettes, go to Section 7.2.1. To back up the system disk to tape cartridge, go to Section 7.2.3.

To restore the system disk from floppy diskettes, go to Section 7.2.2. To restore the system disk from tape cartridge, go to Section 7.2.4.

7.1.3 Installing Standalone BACKUP on Diskettes

Digital recommends that you keep standalone BACKUP on floppy diskettes in case the system disk becomes damaged. To install standalone BACKUP on RX33 floppy diskettes, use the following procedure:

Note: If you have a floppy diskette distribution kit, you already have standalone BACKUP on floppy diskettes. If the original floppy diskettes become damaged, or if you need to make extra copies, use the procedure in this section.

- 1 Obtain a number of blank RX33 floppy diskettes. For example, to build Version 5.2 of standalone BACKUP, you need three floppy diskettes. Affix a paper label to each one. Use a felt-tip pen to write a name on each one. For example, you would use the following names to build a Version 5.2 kit:

```
S/A BKUP RX33 V5.2 1/3
S/A BKUP RX33 V5.2 2/3
S/A BKUP RX33 V5.2 3/3
```

- 2 Log in to the SYSTEM account.

- 3 Enter the following command and press RETURN:

```
$ @SYSSUPDATE:STABACKIT
```

- 4 The procedure asks for the name of the target device. Enter the device name of the drive holding the floppy diskette and press RETURN. For example:

```
%STABACKIT-I-SYMDEL, all global symbols deleted
Enter the name of the device on which to build the kit: DUA2
```

- 5 The procedure displays the following message. Press RETURN (for YES) after each question.

```
The standalone kit requires three floppy diskettes: The first two
floppy diskettes contain the standalone VMS system files; the last
floppy diskette contains the BACKUP application image.
```

The system kit and the application kit can be built separately.

```
Do you want to build the system kit? [Yes/No, default Yes]:
```

```
Do you want to build the application kit? [Yes/No, default Yes]:
```


Backup Procedures

7.1 Overview of Standalone BACKUP

- 6 The procedure gives you two options that you can use to verify the reliability of the standalone BACKUP kit. It asks if you want to use the ANALYZE/MEDIA Utility to check for bad blocks on the target floppy diskettes. Using ANALYZE/MEDIA adds five minutes to the time it takes the procedure to run.

It also asks if you want to verify each file that it copies. Verifying files adds another five minutes to the time it takes the procedure to run.

Digital suggests that you type Y (for YES) and press RETURN when the procedure asks the following question:

Do you want to scan for bad blocks? [Yes/No, default No]:

The procedure displays the following message:

Do you want to verify copies? [Yes/No, default No]:

Press RETURN (for NO). Copy verification is relevant only for tape media.

- 7 The procedure displays the following messages:

Sysgen parameters for standalone VMS have been placed in file
SYS\$SYSROOT:<SYSUPD>VAXVMSSYS.PAR-TEMP-46E0021;1

Please place the first system floppy diskette in drive _ddcu:
This volume will receive the volume label SYSTEM_1.

Enter "YES" when ready:

- 8 Insert the floppy diskette labeled S/A BKUP RX33 V5.2 1/3 in the diskette drive.

Note: If you inserted the diskette into the drive upside down, or if it is improperly aligned, the system might display the following error message:

%MOUNT-F-MEDOFFL, medium is offline

If the system displays this error message, remove the diskette from the drive and reinsert it. When you are ready to continue, type Y (for YES) and press RETURN.

The procedure displays the following message:

Analyzing floppy diskette in _ddcu: for bad blocks . . .

If there are bad blocks, the procedure displays the following message:

Please replace the defective floppy diskette in _ddcu: with another blank floppy diskette.

Discard the floppy diskette with bad blocks. Obtain and label a new floppy diskette and insert it in the diskette drive.

- 9 After running ANALYZE/MEDIA, the procedure mounts the floppy diskette, copies a set of system files, and displays a number of informational messages. For example:

Backup Procedures

7.1 Overview of Standalone BACKUP

```
%MOUNT-I-MOUNT, SYSTEM_1 mounted on _ddcu
%CREATE-I-CREATED, ddcu:<SYS0.SYSEXE> created
%CREATE-I-CREATED, ddcu:<SYS0.SYS$LDR> created
```

- 10** When the last file is copied, the procedure asks you to insert the next floppy diskette. Remove the floppy diskette labeled S/A BKUP RX33 V5.2 1/3. Insert the floppy diskette labeled S/A BKUP RX33 V5.2 2/3. When you are ready to continue, type Y (for YES) and press RETURN. For example:

Please place the second system floppy diskette in drive _ddcu:. This volume will receive the volume label SYSTEM_2.

Enter "YES" when ready: **Y**

The ANALYZE/MEDIA Utility runs as described above.

- 11** Repeat steps 8 through 10 for the third floppy diskette.
- 12** The procedure displays verification messages informing you that files are being copied. When the procedure finishes, it displays a message similar to the following:

Ending time 19-APR-1990 13:45:29.90
Starting time 19-APR-1990 13:22:39.05

The kit is complete.

- 13** Remove the floppy diskette labeled S/A BKUP RX33 V5.2 3/3 from the drive.
- 14** Write-protect the diskettes and store them in a safe place.

7.1.4 Booting Standalone BACKUP from Diskettes

If the system disk containing standalone BACKUP should become unusable, you can boot standalone BACKUP from RX33 diskettes. You need the RX33 floppy diskettes that contain standalone BACKUP (either the distribution floppy diskettes or ones you created). If you are booting from a Version 5.2 kit, the floppy diskettes would be labeled as follows:

Paper Label ¹	Volume Label ²
VMS V5.2 RX33 S/A BKUP 1/3	SYSTEM_1
VMS V5.2 RX33 S/A BKUP 2/3	SYSTEM_2
VMS V5.2 RX33 S/A BKUP 3/3	BACKUP

¹A paper label is a label affixed to a diskette.

²A volume label is the name the VMS operating system uses to refer to a diskette. During the installation, the procedure displays the volume label, not the paper label, in messages.

The procedure asks you to place the floppy diskettes containing standalone BACKUP, successively, in the diskette drive. To boot Version 5.2 of standalone BACKUP, use the following procedure:

Backup Procedures

7.1 Overview of Standalone BACKUP

- 1 Set the Halt Enable/Disable switch on the MicroVAX II to ENABLE.

- 2 If the VMS operating system is not running, go to step 3.

If the VMS operating system is running, log in to the SYSTEM account. Enter the following command and press RETURN:

```
$ @SYS$SYSTEM:SHUTDOWN
```

Answer the questions. When the procedure asks if an automatic system reboot should be performed, press RETURN for NO. When the procedure is finished, it displays the following message:

```
SYSTEM SHUTDOWN COMPLETE -- USE CONSOLE TO HALT SYSTEM
```

- 3 Stop the system. If your system has a HALT button, press it twice. If your system does not have a HALT button, press the F5 (BREAK) key.
- 4 Insert the floppy diskette labeled S/A BKUP RX33 V5.2 1/3 in the diskette drive.
- 5 Enter the BOOT command in the following format and press RETURN:

```
>>> B ddcu
```

Substitute the device name of the drive holding the floppy diskette for *ddcu*. Section 4.3 contains a list of device names for all MicroVAX II devices.

- 6 The procedure asks you for the date and time. Enter the date and time using the 24-hour clock format and press RETURN. For example:

```
VAX/VMS Version V5.2 Major version id = 01 Minor version id = 00  
PLEASE ENTER DATE AND TIME (DD-MMM-YYY HH:MM) 19-APR-1990 13:00
```

- 7 The procedure displays the following message:

```
Configuring devices . . .
```

```
Please remove the volume "SYSTEM_1" from the console device.
```

```
Insert the next standalone system volume and enter "YES" when ready:
```

Remove the floppy diskette labeled VMS V5.2 RX33 S/A BKUP 1/3 from the diskette drive and insert the floppy diskette labeled VMS V5.2 RX33 S/A BKUP 2/3 in the drive. When you are ready to continue, type Y (for YES) and press RETURN.

- 8 The procedure displays the following message:

```
Resuming load operation on volume "SYSTEM_2", please stand by . . .
```

- 9 The procedure displays a list of the local devices on your system and, if you have them, HSC- and MSCP-served devices. For example:

```
Available device MUA0:      device type TK50
```

```
 .  
 .  
 .
```

Check the list of devices. If the list is incomplete, make sure that all the drives are connected properly to the system. See your hardware manuals for details.

Backup Procedures

7.1 Overview of Standalone BACKUP

10 The procedure displays the following message:

Please remove the volume "SYSTEM_2" from the console device.

Insert the standalone application volume and enter "YES" when ready:

Remove the floppy diskette labeled VMS V5.2 RX33 S/A BKUP 2/3 from the diskette drive and insert the floppy diskette labeled VMS V5.2 RX33 S/A BKUP 3/3 in the drive. When you are ready to continue, type Y (for YES) and press RETURN.

11 The procedure displays the following message:

Resuming load operation on volume "BACKUP", please stand by . . .

12 When standalone BACKUP finishes booting, it displays an identification message and the dollar-sign prompt (\$):

```
%BACKUP-I-IDENT, stand-alone BACKUP V5.2; the date is 19-APR-1990 13:00:00.00
$
```

13 Remove the floppy diskette labeled VMS V5.2 RX33 S/A BKUP 3/3 from the diskette drive.

To back up the system disk, go to Section 7.2.1.

To restore the system disk, go to Section 7.2.2.

7.1.5 Installing Standalone BACKUP on a Tape Cartridge

Digital recommends that you keep standalone BACKUP on a tape cartridge in case the system disk becomes damaged. To install standalone BACKUP on a tape cartridge, use the following procedure:

Note: If you have a tape cartridge distribution kit, you already have standalone BACKUP on a tape cartridge. If the original tape cartridge becomes damaged, or if you need to make extra copies, use the procedure in this section.

- 1 Obtain a blank tape cartridge. Write the name on the paper label. For example, you would use the name S/A BKUP V5.2 TK50 to build a Version 5.2 kit. Insert the label into the label slot.

A paper label is the label affixed to a tape cartridge. The procedure displays a volume label, not a paper label, in messages. A volume label is the name the VMS operating system uses to refer to a tape cartridge.

- 2 Write-enable the tape cartridge.
- 3 Insert the tape cartridge labeled S/A BKUP V5.2 TK50 in the tape cartridge drive.
- 4 Log in to the SYSTEM account.
- 5 Enter the following command and press RETURN:

```
$ @SYSSUPDATE:STABACKIT
```


Backup Procedures

7.1 Overview of Standalone BACKUP

- 6 The procedure asks for the name of the target device. Type MUA0 and press RETURN. For example:

```
%STABACKIT-I-SYMDEL, all global symbols deleted
Enter the name of the device on which to build the kit: MUA0
```

- 7 The procedure displays the following message:

```
Please place the scratch tape cartridge in drive _MUA0:.
This volume will receive the volume label SYSTEM.

Enter "YES" when ready:
```

- 8 When you are ready to continue, type Y (for YES) and press RETURN.

- 9 The procedure displays verification messages informing you that files are being copied.

- 10 When standalone BACKUP is installed, the procedure displays a message similar to the following:

```
Ending time 19-APR-1990 13:45:29.90
Starting time 19-APR-1990 13:22:39.05

The kit is complete.
```

- 11 Remove the tape cartridge labeled S/A BKUP V5.2 TK50 from the tape cartridge drive.

- 12 Write-protect the tape cartridge and store it in a safe place.

7.1.6 Booting Standalone BACKUP from a Tape Cartridge

If the system disk containing standalone BACKUP should become unusable, you can boot standalone BACKUP from a tape cartridge. Booting standalone BACKUP from a tape cartridge takes approximately 20 minutes. You need a tape cartridge that contains standalone BACKUP (either the distribution tape cartridge or one that you created). To boot standalone BACKUP from a tape cartridge, use the following procedure:

- 1 Set the Break Enable/Disable switch to ENABLE.
- 2 If the VMS operating system is not running, go to step 3.

If the VMS operating system is running, log in to the SYSTEM account. Enter the following command and press RETURN:

```
$ @SYS$SYSTEM:SHUTDOWN
```

Answer the questions. When the procedure asks if an automatic system reboot should be performed, press RETURN for NO. When the procedure is finished, it displays the following message:

```
SYSTEM SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM
```

- 3 Stop the system. If your system has a HALT button, press it twice. If your system does not have a HALT button, press the F5 (BREAK) key.
- 4 Insert the tape cartridge containing standalone BACKUP in the tape cartridge drive.

Backup Procedures

7.1 Overview of Standalone BACKUP

- 5 Enter the following command and press RETURN:

```
>>> B MUA0
```

- 6 The procedure asks for the date and time. Enter the date and time using the 24-hour clock format and press RETURN. For example:

```
VAX/VMS Version V5.2 Major version id = 01 Minor version id = 00
```

```
PLEASE ENTER DATE AND TIME (DD-MMM-YYY HH:MM) 19-APR-1990 13:00
```

- 7 The procedure displays a list of the local devices on your system and, if you have them, HSC- and MSCP-served devices. For example:

```
Available device MUA0:      device type TK50
```

Check the list of devices. If the list is incomplete, make sure that all the drives are connected properly to the system. See your hardware manuals for details.

- 8 When standalone BACKUP finishes booting, it displays an identification message followed by the dollar-sign prompt (\$) :

```
%BACKUP-I-IDENT, stand-alone BACKUP V5.2; the date is 19-APR-1990 13:00:00.00  
$
```

- 9 Remove the tape cartridge containing standalone BACKUP from the tape cartridge drive.

To back up the system disk, go to Section 7.2.3.

To restore the system disk, go to Section 7.2.4.

7.2 Backing Up the System Disk

You should back up the system disk for the following reasons:

- In case a problem occurs during a VMS upgrade or update, or during the installation of other software products. *Before* you attempt any of these procedures, you should back up the system disk. If a problem occurs, you can restore the backup copy of the system disk.
 - To prevent loss of system files if they are deleted accidentally. *After* you install or upgrade the VMS operating system, or any other software products, you should back up the system disk. If a system file is deleted and renders the system disk inoperable, you can restore the backup copy and continue to use the system.
 - In case the drive that holds the system disk malfunctions. If you have a backup copy of the VMS operating system, you can restore it to a functioning disk and continue to use the system.
 - To eliminate disk fragmentation. Fragmentation happens when files are stored noncontiguously on the disk. The BACKUP command creates a copy on which files are stored contiguously.
- If the system disk is removable, eliminating disk fragmentation is a one-step process. Use the backup copy as the new system disk. Store the old system disk in a safe place.

Backup Procedures

7.2 Backing Up the System Disk

- If the system disk is fixed, back it up to a tape cartridge or to floppy diskettes. Then restore the files to the original system disk.

Digital recommends that you use standalone BACKUP, which uses a subset of Backup Utility qualifiers, to back up and restore the system disk. It is especially important that you understand the functions of the /IMAGE and /PHYSICAL qualifiers to the BACKUP command before using standalone BACKUP.

Qualifier	Function
/IMAGE	Lets you create a functionally equivalent copy of the entire system disk
/PHYSICAL	Copies, saves, restores, or compares the entire system disk in terms of logical blocks, ignoring any file structure

For a complete description of the Backup Utility and its qualifiers, see the *VMS Backup Utility Manual*.

7.2.1 Backing Up the System Disk to Diskettes

To back up the system disk to floppy diskettes, use the following procedure:

- 1 Boot standalone BACKUP as described in either Section 7.1.2 or Section 7.1.4.
- 2 Determine the device names of the drive holding the system disk and the drive that will hold the backup floppy diskettes. Section 4.3 contains a list of device names for all MicroVAX devices.

Note: You use at least 25 floppy diskettes to back up the system disk. Label the floppy diskettes in sequence. The procedure asks you for each diskette until the operation is complete.

- 3 Write-enable a scratch diskette.
- 4 Insert the floppy diskette in the diskette drive.
- 5 Enter the BACKUP command in the following format and press RETURN:

```
$ BACKUP/IMAGE/VERIFY source-drive: target-drive:saveset.BCK/SAVE_SET
```

where:

- *source-drive* is the location of the files you want to back up. Use the device name of the drive holding the system disk.
- *target-drive* is the destination. Use the device name of the drive holding the backup floppy diskette.
- *saveset.BCK* is the name of the saveset (the name should reflect the contents of the backup diskette and cannot exceed 17 characters in length).

For example:

```
$ BACKUP/IMAGE/VERIFY DUA0: DUA2:APR_19_1990.BCK/SAVE_SET
```


Backup Procedures

7.2 Backing Up the System Disk

Disregard any error messages similar to the following:

%BACKUP-W-INCFILATR, incomplete file attribute data for . . .

%BACKUP-I-NO BACKUP, DUA1:[SYS0.SYSEXE]PAGEFILE.SYS:1 data not copied, file marked NOBACKUP

These messages are normal when you back up the VMS operating system to floppy diskettes.

- 6 The procedure displays the following message:

%BACKUP-I-STARTVERIFY, starting verification pass

- 7 The procedure displays the following messages:

%BACKUP-I-RESUME, Resuming operation on volume 2

%BACKUP-I-READYREAD, Mount volume 2 on DUA2: for writing
Enter "YES" when ready.

- a. Remove the backup diskette from the drive.
- b. Label the diskette COMPLETE SYSTEM BACKUP, number it, and include the date.
- c. Write-protect the backup diskette.
- d. Write-enable another scratch diskette and insert it in the drive.
- e. When you are ready to continue, type Y (for YES) and press RETURN.
- f. The procedure displays the following message:

%BACKUP-I-STARTVERIFY, starting verification pass

Each time the procedure displays a mount request, follow steps a through e.

- 8 When the procedure is finished, it displays the following message:

%BACKUP-I-PROCDONE, operation completed. Processing finished at 19-APR-1990 13:00:00.00
If you do not want to perform another standalone BACKUP operation, use the console to halt the system.

If you do want to perform another standalone BACKUP operation, ensure the standalone application volume is online and ready.
Enter "YES" to continue:

- 9 Remove the last backup diskette from the drive. Label the diskette COMPLETE SYSTEM BACKUP and number it, and include the date.
- 10 Write-protect the diskette.
- 11 Stop the system. If your system has a HALT button, press it twice. If your system does not have a HALT button, press the F5 (BREAK) key.
- 12 Reboot the system.

Store the backup diskettes in a safe place.

Note: The BACKUP command creates a system disk that includes a Digital-provided set of volume parameters, including a CLUSTER_SIZE (disk access scheme) of value 1. (The CLUSTER_SIZE parameter refers to the way files are stored on the disk, NOT to VAXcluster environments.) You can change most volume parameters later with the SET VOLUME command. However,

Backup Procedures

7.2 Backing Up the System Disk

to change the **CLUSTER_SIZE** parameter, you must back up the system disk to a disk that has been initialized previously with the **CLUSTER_SIZE** VALUE that you want. To prevent the **BACKUP** command from reinitializing the target disk, use the **/NOINITIALIZE** qualifier with the **BACKUP** command. For more information about initializing a disk, see the *Guide to Maintaining a VMS System*. For more information on the **BACKUP** command, see the *VMS Backup Utility Manual*.

7.2.2 Restoring the System Disk from Diskettes

To restore the system disk from diskettes, use the following procedure:

- 1 Boot standalone **BACKUP** as described in Section 7.1.2 or Section 7.1.4.
- 2 Determine the device name of the drive holding the system disk and the drive that will hold the backup floppy diskettes. For a list of device names for all MicroVAX devices, see Section 4.3.
- 3 Insert the first backup diskette in the diskette drive.
- 4 Enter the **BACKUP** command in the following format and press **RETURN**:

```
$ BACKUP/IMAGE/VERIFY source-drive:saveset.BCK/SAVE_SET target-drive:
```

where:

- *source-drive* is the location of the files you want to restore. Use the device name of the drive holding the backup floppy diskette.
- *saveset.BCK* is the name of the saveset.
- *target-drive* is the destination. Use the device name of the drive holding the system disk.

For example:

```
$ BACKUP/IMAGE/VERIFY DUA2:APR_19_1990.BCK/SAVE_SET DUA1:
```

- 5 The procedure displays the following message:

```
%BACKUP-I-STARTVERIFY, starting verification pass
```

- 6 The procedure displays the following message:

```
%BACKUP-I-RESUME, Resuming operation on volume 2
%BACKUP-I-READYREAD, Mount volume 2 on DUA2: for reading
Enter "YES" when ready..
```

- a. Remove the backup diskette from the drive.
- b. Make sure the next backup diskette is write-protected and insert it in the drive.
- c. When you are ready to continue, type **Y** (for **YES**) and press **RETURN**.
- d. The procedure displays the following message:

```
%BACKUP-I-STARTVERIFY, starting verification pass
```


Backup Procedures

7.2 Backing Up the System Disk

Each time the procedure displays a mount request, follow steps a through c.

- 7 When the procedure is complete, it displays the following message:

```
%BACKUP-I-PROCDONE, operation completed. Processing finished at 19-APR-1990 13:00:00.00
If you do not want to perform another standalone BACKUP operation,
use the console to halt the system.
```

```
If you do want to perform another standalone BACKUP operation,
ensure the standalone application volume is online and ready.
Enter "YES" to continue:
```

- 8 Remove the last backup diskette from the diskette drive.
- 9 Stop the system. If your system has a HALT button, press it twice. If your system does not have a HALT button, press the F5 (BREAK) key.
- 10 Reboot the system.

Store the backup diskettes in a safe place.

7.2.3 Backing Up the System Disk to a Tape Cartridge

To back up the system disk to a tape cartridge, use the following procedure:

- 1 Obtain a scratch tape that you can use for the backup copy.
- 2 Write-enable the scratch tape cartridge.
- 3 Insert the tape cartridge in the tape cartridge drive.
- 4 Boot standalone BACKUP as described in Section 7.1.6.
- 5 Determine the device name of the drive holding the system disk and the drive holding the backup tape. Section 4.3 contains a list of device names for all MicroVAX devices.
- 6 Enter the BACKUP command in the following format:

```
$ BACKUP/IMAGE/VERIFY source-drive: target-drive:saveset.BCK/LABEL=volume-label/REWIND
```

where:

- *source-drive* is the location of the files you want to back up. Use the device name of the drive holding the system disk.
- *target-drive* is the destination. Use the device name of the drive holding the backup tape.
- *saveset.BCK* is the name of the saveset (the name should reflect the contents of the backup tape and cannot exceed 17 characters in length).
- *volume-label* is the volume label of the tape in the target-drive. If the tape has been initialized already, use the same volume label that was assigned by the INITIALIZE command. If the tape has not been initialized, you can assign a volume label at this time. The volume label cannot have more than six characters.

For example:

```
$
```


Backup Procedures

7.2 Backing Up the System Disk

- 7 The procedure displays the following message:

%BACKUP-I-STARTVERIFY, starting verification pass

- 8 If your system disk contains more data than one tape cartridge can store, the procedure displays the following messages:

%BACKUP-I-RESUME, Resuming operation on volume 2

%BACKUP-I-READYWRITE, Mount volume 2 on _MUA0: for writing
Enter "YES" when ready:

If the procedure does not display these messages, go to step 9.

- a. Remove the backup tape cartridge from the drive.
- b. Label the tape COMPLETE SYSTEM BACKUP, number it, and include the date.
- c. Write-protect the tape cartridge.
- d. Write-enable another scratch tape cartridge and insert it in the drive.
- e. When you are ready to continue, type Y (for YES) and press RETURN.
- f. The procedure displays the following message:

%BACKUP-I-STARTVERIFY, starting verification pass

Each time the procedure displays a mount request, follow steps a through c.

- 9 When the procedure is finished, it displays the following message:

%BACKUP-I-PROCDONE, operation completed. Processing finished at 19-APR-1990 15:00:00.00
If you do not want to perform another standalone BACKUP operation,
use the console to halt the system.

If you do want to perform another standalone BACKUP operation,
ensure the standalone application volume is online and ready.
Enter "YES" to continue:

- 10 Remove the backup tape cartridge from the drive. Label the tape cartridge COMPLETE SYSTEM BACKUP and indicate the date.
- 11 Write-protect the tape cartridge.
- 12 Stop the system. If your system has a HALT button, press it twice. If your system does not have a HALT button, press the F5 (BREAK) key.
- 13 Reboot the system.

Store the backup tape cartridge in a safe place.

Note: The BACKUP command creates a system disk that includes a Digital-provided set of volume parameters, including a CLUSTER_SIZE (disk access scheme) of value 1. (The CLUSTER_SIZE parameter refers to the way files are stored on the disk, NOT to VAXcluster environments.) You can change most volume parameters later with the SET VOLUME command. However, to change the CLUSTER_SIZE parameter, you must back up the system disk to a disk that has been initialized previously with the CLUSTER_SIZE value that you want. To prevent the BACKUP command from reinitializing the target disk, use the

Backup Procedures

7.2 Backing Up the System Disk

/NOINITIALIZE qualifier. For more information about initializing a disk, see the *Guide to Maintaining a VMS System*. For more information on the **BACKUP** command, see the *VMS Backup Utility Manual*.

7.2.4 Restoring the System Disk from a Tape Cartridge

To restore the system disk from a tape cartridge, use the following procedure:

- 1 Write-protect the backup tape cartridge.
- 2 Insert the first backup tape cartridge in the tape cartridge drive.
- 3 Boot standalone **BACKUP** as described in Section 7.1.2 or Section 7.1.6.
- 4 Determine the device name of the drive holding the system disk and the drive holding the backup tape. Section 4.3 contains a list of device names for all MicroVAX devices.
- 5 Enter the **BACKUP** command in the following format:

```
$ BACKUP/IMAGE/VERIFY source-drive:saveset.BCK/REWIND target-drive
```

where:

- *source-drive* is the location of the files you want to restore. Use the device name of the drive holding the backup tape.
- *saveset.BCK* is the name of the saveset.
- *target-drive* is the destination. Use the device name of the drive holding the system disk.

For example:

```
$ BACKUP/IMAGE/VERIFY MUA0:APR_19_1990.BCK/REWIND DUAL:
```

- 6 The procedure displays the following message:

```
%BACKUP-I-STARTVERIFY, starting verification pass
```

If the backup copy of the system disk is *one* tape, go to step 8.

- 7 If the backup copy of the system disk consists of several tape cartridges, the procedure displays the following message:

```
%BACKUP-I-RESUME, Resuming operation on volume 2
%BACKUP-I-READYREAD, Mount volume 2 on MUA0: for reading
Enter "YES" when ready.
```

- a. Remove the backup tape cartridge from the drive.
- b. Insert the next backup tape cartridge in the drive.
- c. When you are ready to continue, type Y (for YES) and press RETURN.
- d. The procedure displays the following message:

```
%BACKUP-I-STARTVERIFY, starting verification pass
```


Backup Procedures

7.2 Backing Up the System Disk

Each time the procedure displays a mount request, follow steps a through c.

- 8 When the procedure is finished, it displays the following message:

```
%BACKUP-I-PROCDONE, operation completed. Processing finished at 19-APR-1990 15:00:00.00
If you do not want to perform another standalone BACKUP operation,
use the console to halt the system.
```

If you do want to perform another standalone BACKUP operation, ensure the standalone application volume is online and ready. Enter "YES" to continue:

- 9 Remove the last backup tape cartridge from the drive.
- 10 Stop the system. If your system has a HALT button, press it twice. If your system does not have a HALT button, press the F5 (BREAK) key.
- 11 Reboot the system.

Store the backup tape cartridge in a safe place.

Glossary

boot or bootstrap: The process of loading system software into a processor's main memory. This guide uses the term *boot* to refer to this process.

boot server: A computer that is part of a local area or mixed-interconnect VAXcluster. The boot server in a local area or mixed-interconnect VAXcluster has a system disk that contains cluster common files; other nodes in the cluster (satellite nodes) can access these files. See also *satellite node*.

console mode: In console mode, you control the system by entering console-mode commands. In console mode, the VMS operating system is not running.

device name: The name you use to identify a device on the system. A device name indicates the device code, controller designation, and unit number.

DECW\$TAILOR: A software program that lets you delete or add VMS DECwindows files.

local area VAXcluster: Consists of a VAX computer that acts as a boot server and a number of low-end VAX computers that act as satellite nodes. Ethernet connects all of the computers. These computers share a single file system.

local drive: Any drive that is connected directly to a computer is referred to as a local drive.

media: A generic term that refers to any packaging agent capable of storing computer software. Examples of media include magnetic tapes, floppy diskettes, disk packs, and tape cartridges.

mixed-interconnect VAXcluster: A computer system consisting of a number of VAX computers. It uses both the computer interconnect (CI) and Ethernet to communicate with other VAX computers in the cluster.

program mode: In program mode, you control the system through the VMS operating system.

satellite node: A computer that is part of a local area or mixed-interconnect VAXcluster. A satellite node is booted remotely from the system disk of the boot server in the local area or mixed-interconnect VAXcluster. See also *boot server*.

save set: The format in which the Backup Utility stores files. The VMS operating system is shipped in this format.

scratch disk: A blank disk or a disk with files that you no longer need.

spin up/spin down: To spin up means to bring a disk drive up to operating speed. To spin down means to bring it to a gradual stop.

Glossary

standalone BACKUP: A version of the Backup Utility that runs from memory without the control of the VMS operating system.

standalone system: A computer system with only one VAX computer.

system disk: The disk that contains (or will contain) the VMS operating system. A VMS system disk is set up so that most of the VMS files can be shared by several computers. In addition, each computer has its own directory on the system disk that contains its page, swap, and dump files.

VAXcluster environment: A computer system consisting of a number of VAX computers. There are three types of VAXcluster environments: CI-only, local area, and mixed-interconnect.

VMS User Environment Test Package (UETP): A software package that tests all the standard peripheral devices on your system, various commands and operating system functions, the system's multi-user capability, DECnet-VAX, and the VAXcluster environment.

VMSTAILOR: A software program that lets you delete or add VMS operating system files.

Index

A

Access slot
 on diskette drive • 2-23
Activity light
 on diskette drive • 2-24
 on tape cartridge drive • 2-14, 2-21
ALLOCLASS parameter • 4-7

B

BA200 series model
 summary of controls • 2-12
 summary of indicator lights • 2-12
BACKUP
 See Backup Utility
BACKUP command • 7-9
 IMAGE qualifier • 7-10
 NOINITIALIZE qualifier • 7-11, 7-14
 PHYSICAL qualifier • 7-10
Backup Utility (BACKUP) • 7-1
BOOT command • 6-1
Booting the system
 minimum startup • 6-5
Bugcheck message • 6-9

C

Cartridge-release handle
 on tape cartridge drive • 2-22
Cluster group number
 rules for creating • 4-7
Cluster password
 rules for creating • 4-7
CLUSTER_SIZE attribute • 7-11, 7-14
Console mode • 2-18
Console subsystem
 console mode • 2-18
 program mode • 2-18
 with a KFQSA controller • 4-4
Console terminal
 description of • 2-18

Console terminal (cont'd.)
 VAXstation II workstation display monitor • 2-18, 2-19
CONTINUE command • 6-4
Control characters
 CTRL/T • 6-9
Controller designation
 definition • 4-1
CRASH commands • 6-8

D

DECnet node address • 4-7
DECnet node name • 4-7
Device code
 definition • 4-1
Device name • 4-2
 controller designation • 4-1
 device code • 4-1
 on all MicroVAX systems • 4-5
 on system without RA-series disks • 4-2
 on system with RA-series disks • 4-3
 relationship to number of fixed disks • 4-2
 syntax • 4-1
 unit number • 4-1
Diskette
 description of • 3-7
 differences between RX33 and RX50 • 3-7
 dismounting • 3-12
 initializing and formatting • 3-10
 mounting • 3-12
 removing • 3-13
 write protecting • 3-9
 write-protect notch • 3-9
 write-protect tab • 3-9
Diskette drive
 access slot • 2-23
 activity light • 2-24
 lever • 2-23
 types of • 2-23
DISMOUNT command • 3-6, 3-12
Distribution media
 definition • 4-1

F

F5 (BREAK) key
BA200 series model • 2-13
Fixed disk
formatting before installing VMS • 4-6

H

HALT button • 2-9

I

/IMAGE qualifier • 7-10
INITIALIZE command • 3-4, 3-10
Installation procedure
definition • 1-1

L

Label
paper • 5-3, 5-4, 7-5
volume • 5-3, 5-4, 7-5
Lever
on diskette drive • 2-23
LOAD/UNLOAD button
on tape cartridge drive • 2-21

M

Mandatory update
definition • 1-2
MOUNT command • 3-5, 3-12

N

NO SCROLL key
F1 • 6-9

O

OPCCRASH.EXE • 6-8

P

Paper label
definition • 5-3, 5-4, 7-5
/PHYSICAL qualifier • 7-10
Processor control panel
description of • 2-5
summary of controls • 2-8
summary of indicator lights • 2-8
Program mode • 2-18

S

Saveset.BCK
definition • 7-10
SHOW DEVICE command • 3-3, 3-6, 3-9, 3-12
SHOW DEVICES command • 4-6
SHUTDOWN.COM • 6-7
Source-drive
definition • 7-10
STABACKIT.COM • 7-3, 7-7
Standalone BACKUP • 7-1
definition • 7-1
function during installation • 5-3
relation to Backup Utility • 7-1
Status line
pressing CTRL/T • 6-9
System disk
backing up • 7-10
choosing a • 4-2
definition • 4-1
reasons for backing up • 7-9
System Generation Utility (SYSGEN) • 6-4
ALLOCLASS parameter • 4-7
commands for conversational boot • 6-4
System hang • 6-9

T

Tape cartridge

- dismounting • 3-6
- initializing • 3-4
- inserting • 3-3
- label slot • 3-1
- mounting • 3-5
- removing • 3-6
- write protecting • 3-2
- write-protect switch • 3-2

Tape cartridge drive • 3-3

- activity light • 2-14, 2-21
- cartridge-release handle • 2-22
- device name of • 2-20
- LOAD/UNLOAD button • 2-13, 2-21
- summary of controls • 2-22
- summary of indicator lights • 2-22

Target-drive

- definition • 7-10

U

Unit number

- definition • 4-1

Update procedure

- See also mandatory update
- definition • 1-2
- restrictions • 1-2

Upgrade procedure

- definition • 1-1
- restrictions • 1-2

V

VAXstation II workstation display monitor

- console terminal • 2-18, 2-19

VAXVMSSYS.PAR • 6-1

Volume label

- definition • 5-3, 5-4, 7-5, 7-13
- used with BACKUP command • 7-13

U

T

V

How to Order Additional Documentation

Technical Support

If you need help deciding which documentation best meets your needs, call 800-343-4040 before placing your electronic, telephone, or direct mail order.

Electronic Orders

To place an order at the Electronic Store, dial 800-DEC-DEMO (800-332-3366) using a 1200- or 2400-baud modem. If you need assistance using the Electronic Store, call 800-DIGITAL (800-344-4825).

Telephone and Direct Mail Orders

Your Location	Call	Contact
Continental USA, Alaska, or Hawaii	800-DIGITAL	Digital Equipment Corporation P.O. Box CS2008 Nashua, New Hampshire 03061
Puerto Rico	809-754-7575	Local DIGITAL subsidiary
Canada	800-267-6215	Digital Equipment of Canada Attn: DECdirect Operations KAO2/2 P.O. Box 13000 100 Herzberg Road Kanata, Ontario, Canada K2K 2A6
International	_____	Local DIGITAL subsidiary or approved distributor
Internal ¹	_____	SDC Order Processing - WMO/E15 or Software Distribution Center Digital Equipment Corporation Westminster, Massachusetts 01473

¹For internal orders, you must submit an Internal Software Order Form (EN-01740-07).

How to Order Additional Documentation

Technical Support

For technical support, please contact your local distributor or the following technical support center:

Electronic Orders

For electronic orders, please visit our website at www.rockwellautomation.com or call 1-800-541-4373.

Telephone and Print Orders

Product Line	Phone Number	Product Line
ControlLogix	1-800-541-4373	PowerFlex
CompactLogix	1-800-541-4373	PowerFlex 700
MicroLogix	1-800-541-4373	PowerFlex 700T
Logix5000	1-800-541-4373	PowerFlex 700T-2
Logix5000-1	1-800-541-4373	PowerFlex 700T-3
Logix5000-2	1-800-541-4373	PowerFlex 700T-4
Logix5000-3	1-800-541-4373	PowerFlex 700T-5
Logix5000-4	1-800-541-4373	PowerFlex 700T-6
Logix5000-5	1-800-541-4373	PowerFlex 700T-7
Logix5000-6	1-800-541-4373	PowerFlex 700T-8
Logix5000-7	1-800-541-4373	PowerFlex 700T-9
Logix5000-8	1-800-541-4373	PowerFlex 700T-10
Logix5000-9	1-800-541-4373	PowerFlex 700T-11
Logix5000-10	1-800-541-4373	PowerFlex 700T-12
Logix5000-11	1-800-541-4373	PowerFlex 700T-13
Logix5000-12	1-800-541-4373	PowerFlex 700T-14
Logix5000-13	1-800-541-4373	PowerFlex 700T-15
Logix5000-14	1-800-541-4373	PowerFlex 700T-16
Logix5000-15	1-800-541-4373	PowerFlex 700T-17
Logix5000-16	1-800-541-4373	PowerFlex 700T-18
Logix5000-17	1-800-541-4373	PowerFlex 700T-19
Logix5000-18	1-800-541-4373	PowerFlex 700T-20
Logix5000-19	1-800-541-4373	PowerFlex 700T-21
Logix5000-20	1-800-541-4373	PowerFlex 700T-22
Logix5000-21	1-800-541-4373	PowerFlex 700T-23
Logix5000-22	1-800-541-4373	PowerFlex 700T-24
Logix5000-23	1-800-541-4373	PowerFlex 700T-25
Logix5000-24	1-800-541-4373	PowerFlex 700T-26
Logix5000-25	1-800-541-4373	PowerFlex 700T-27
Logix5000-26	1-800-541-4373	PowerFlex 700T-28
Logix5000-27	1-800-541-4373	PowerFlex 700T-29
Logix5000-28	1-800-541-4373	PowerFlex 700T-30
Logix5000-29	1-800-541-4373	PowerFlex 700T-31
Logix5000-30	1-800-541-4373	PowerFlex 700T-32
Logix5000-31	1-800-541-4373	PowerFlex 700T-33
Logix5000-32	1-800-541-4373	PowerFlex 700T-34
Logix5000-33	1-800-541-4373	PowerFlex 700T-35
Logix5000-34	1-800-541-4373	PowerFlex 700T-36
Logix5000-35	1-800-541-4373	PowerFlex 700T-37
Logix5000-36	1-800-541-4373	PowerFlex 700T-38
Logix5000-37	1-800-541-4373	PowerFlex 700T-39
Logix5000-38	1-800-541-4373	PowerFlex 700T-40
Logix5000-39	1-800-541-4373	PowerFlex 700T-41
Logix5000-40	1-800-541-4373	PowerFlex 700T-42
Logix5000-41	1-800-541-4373	PowerFlex 700T-43
Logix5000-42	1-800-541-4373	PowerFlex 700T-44
Logix5000-43	1-800-541-4373	PowerFlex 700T-45
Logix5000-44	1-800-541-4373	PowerFlex 700T-46
Logix5000-45	1-800-541-4373	PowerFlex 700T-47
Logix5000-46	1-800-541-4373	PowerFlex 700T-48
Logix5000-47	1-800-541-4373	PowerFlex 700T-49
Logix5000-48	1-800-541-4373	PowerFlex 700T-50
Logix5000-49	1-800-541-4373	PowerFlex 700T-51
Logix5000-50	1-800-541-4373	PowerFlex 700T-52
Logix5000-51	1-800-541-4373	PowerFlex 700T-53
Logix5000-52	1-800-541-4373	PowerFlex 700T-54
Logix5000-53	1-800-541-4373	PowerFlex 700T-55
Logix5000-54	1-800-541-4373	PowerFlex 700T-56
Logix5000-55	1-800-541-4373	PowerFlex 700T-57
Logix5000-56	1-800-541-4373	PowerFlex 700T-58
Logix5000-57	1-800-541-4373	PowerFlex 700T-59
Logix5000-58	1-800-541-4373	PowerFlex 700T-60
Logix5000-59	1-800-541-4373	PowerFlex 700T-61
Logix5000-60	1-800-541-4373	PowerFlex 700T-62
Logix5000-61	1-800-541-4373	PowerFlex 700T-63
Logix5000-62	1-800-541-4373	PowerFlex 700T-64
Logix5000-63	1-800-541-4373	PowerFlex 700T-65
Logix5000-64	1-800-541-4373	PowerFlex 700T-66
Logix5000-65	1-800-541-4373	PowerFlex 700T-67
Logix5000-66	1-800-541-4373	PowerFlex 700T-68
Logix5000-67	1-800-541-4373	PowerFlex 700T-69
Logix5000-68	1-800-541-4373	PowerFlex 700T-70
Logix5000-69	1-800-541-4373	PowerFlex 700T-71
Logix5000-70	1-800-541-4373	PowerFlex 700T-72
Logix5000-71	1-800-541-4373	PowerFlex 700T-73
Logix5000-72	1-800-541-4373	PowerFlex 700T-74
Logix5000-73	1-800-541-4373	PowerFlex 700T-75
Logix5000-74	1-800-541-4373	PowerFlex 700T-76
Logix5000-75	1-800-541-4373	PowerFlex 700T-77
Logix5000-76	1-800-541-4373	PowerFlex 700T-78
Logix5000-77	1-800-541-4373	PowerFlex 700T-79
Logix5000-78	1-800-541-4373	PowerFlex 700T-80
Logix5000-79	1-800-541-4373	PowerFlex 700T-81
Logix5000-80	1-800-541-4373	PowerFlex 700T-82
Logix5000-81	1-800-541-4373	PowerFlex 700T-83
Logix5000-82	1-800-541-4373	PowerFlex 700T-84
Logix5000-83	1-800-541-4373	PowerFlex 700T-85
Logix5000-84	1-800-541-4373	PowerFlex 700T-86
Logix5000-85	1-800-541-4373	PowerFlex 700T-87
Logix5000-86	1-800-541-4373	PowerFlex 700T-88
Logix5000-87	1-800-541-4373	PowerFlex 700T-89
Logix5000-88	1-800-541-4373	PowerFlex 700T-90
Logix5000-89	1-800-541-4373	PowerFlex 700T-91
Logix5000-90	1-800-541-4373	PowerFlex 700T-92
Logix5000-91	1-800-541-4373	PowerFlex 700T-93
Logix5000-92	1-800-541-4373	PowerFlex 700T-94
Logix5000-93	1-800-541-4373	PowerFlex 700T-95
Logix5000-94	1-800-541-4373	PowerFlex 700T-96
Logix5000-95	1-800-541-4373	PowerFlex 700T-97
Logix5000-96	1-800-541-4373	PowerFlex 700T-98
Logix5000-97	1-800-541-4373	PowerFlex 700T-99
Logix5000-98	1-800-541-4373	PowerFlex 700T-100
Logix5000-99	1-800-541-4373	PowerFlex 700T-101
Logix5000-100	1-800-541-4373	PowerFlex 700T-102

© 2004 Rockwell Automation. All rights reserved. Rockwell Automation is a registered trademark of Rockwell Automation.

Reader's Comments

VMS Installation and
Operations: VAXstation II,
II/GPX and MicroVAX II
AA-LB32B-TE

Please use this postage-paid form to comment on this manual. If you require a written reply to a software problem and are eligible to receive one under Software Performance Report (SPR) service, submit your comments on an SPR form.

Thank you for your assistance.

I rate this manual's:

	Excellent	Good	Fair	Poor
Accuracy (software works as manual says)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Completeness (enough information)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clarity (easy to understand)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organization (structure of subject matter)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Figures (useful)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Examples (useful)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Index (ability to find topic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Page layout (easy to find information)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I would like to see more/less _____

What I like best about this manual is _____

What I like least about this manual is _____

I found the following errors in this manual:

Page	Description
------	-------------

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Additional comments or suggestions to improve this manual:

I am using **Version** _____ of the software this manual describes.

Name/Title _____ Dept. _____

Company _____ Date _____

Mailing Address _____

Phone _____

--- Do Not Tear - Fold Here and Tape ---

digitalTM



No Postage
Necessary
if Mailed
in the
United States

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 33 MAYNARD MASS.

POSTAGE WILL BE PAID BY ADDRESSEE

DIGITAL EQUIPMENT CORPORATION
Corporate User Publications—Spit Brook
ZK01-3/J35 110 SPIT BROOK ROAD
NASHUA, NH 03062-9987



--- Do Not Tear - Fold Here ---

Cut Along Dotted Line

Reader's Comments

VMS Installation and
Operations: VAXstation II,
II/GPX and MicroVAX II
AA-LB32B-TE

Please use this postage-paid form to comment on this manual. If you require a written reply to a software problem and are eligible to receive one under Software Performance Report (SPR) service, submit your comments on an SPR form.

Thank you for your assistance.

I rate this manual's:

	Excellent	Good	Fair	Poor
Accuracy (software works as manual says)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Completeness (enough information)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clarity (easy to understand)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organization (structure of subject matter)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Figures (useful)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Examples (useful)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Index (ability to find topic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Page layout (easy to find information)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I would like to see more/less _____

What I like best about this manual is _____

What I like least about this manual is _____

I found the following errors in this manual:

Page	Description
------	-------------

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Additional comments or suggestions to improve this manual:

I am using **Version** _____ of the software this manual describes.

Name/Title _____ Dept. _____

Company _____ Date _____

Mailing Address _____

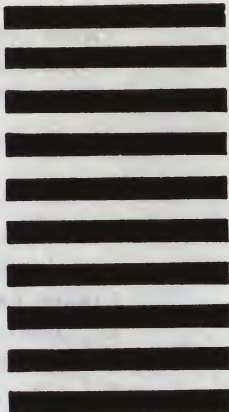
Phone _____

--- Do Not Tear - Fold Here and Tape ---

digitalTM



No Postage
Necessary
if Mailed
in the
United States



BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 33 MAYNARD MASS.

POSTAGE WILL BE PAID BY ADDRESSEE

DIGITAL EQUIPMENT CORPORATION
Corporate User Publications—Spit Brook
ZK01-3/J35 110 SPIT BROOK ROAD
NASHUA, NH 03062-9987



--- Do Not Tear - Fold Here ---

Cut Along Dotted Line

digital